

382/260
 Print fig 1A

BASIC ELEMENTS OF SYSTEM FOR ANALYSIS OF VARIABLES

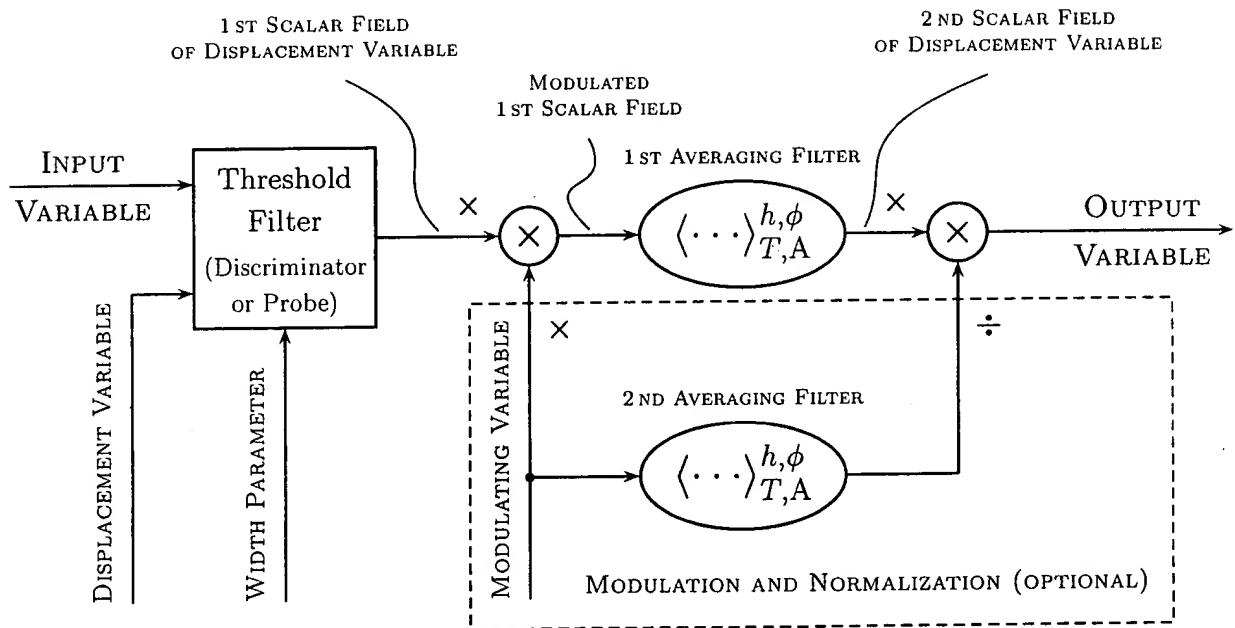


Fig. 1 a

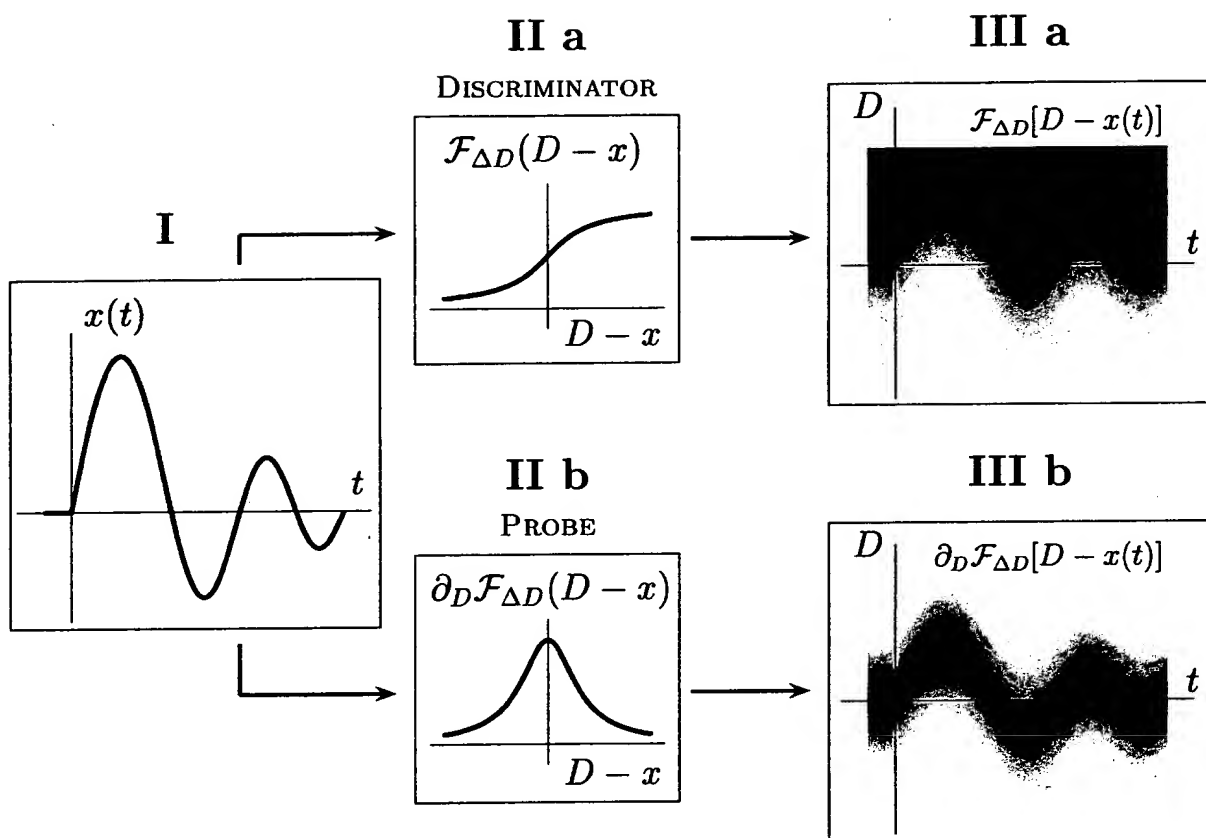


Fig. 1 b

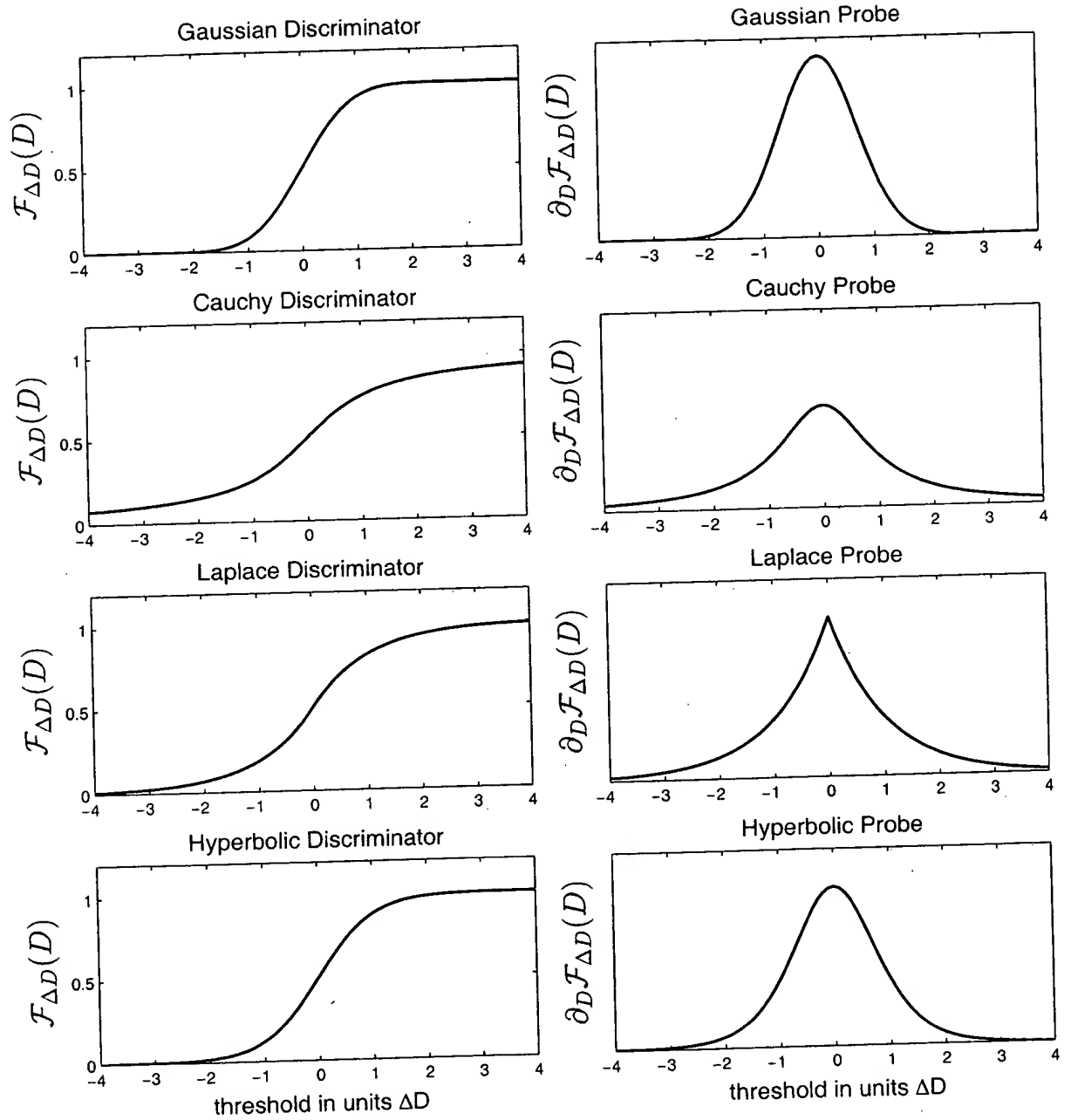


Fig. 2

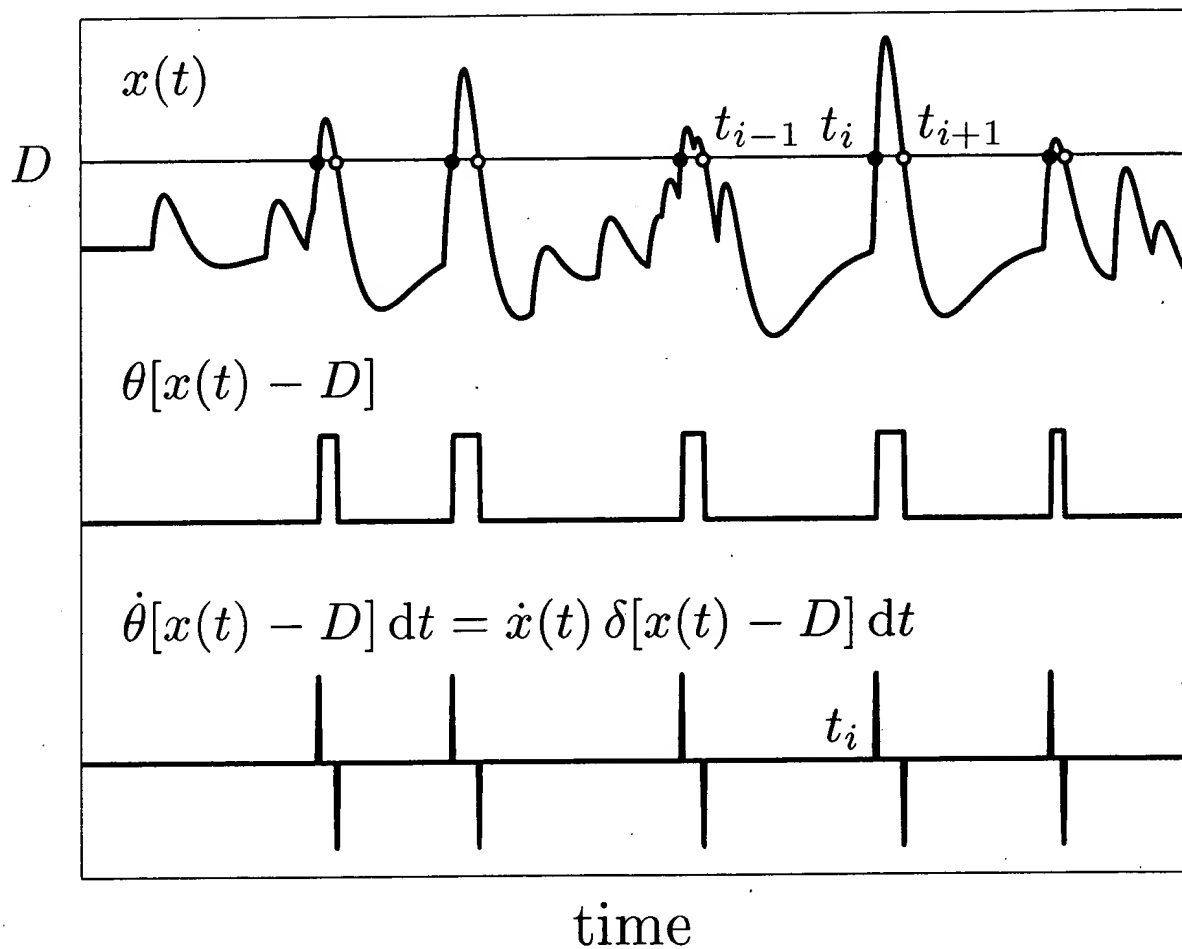


Fig. 3

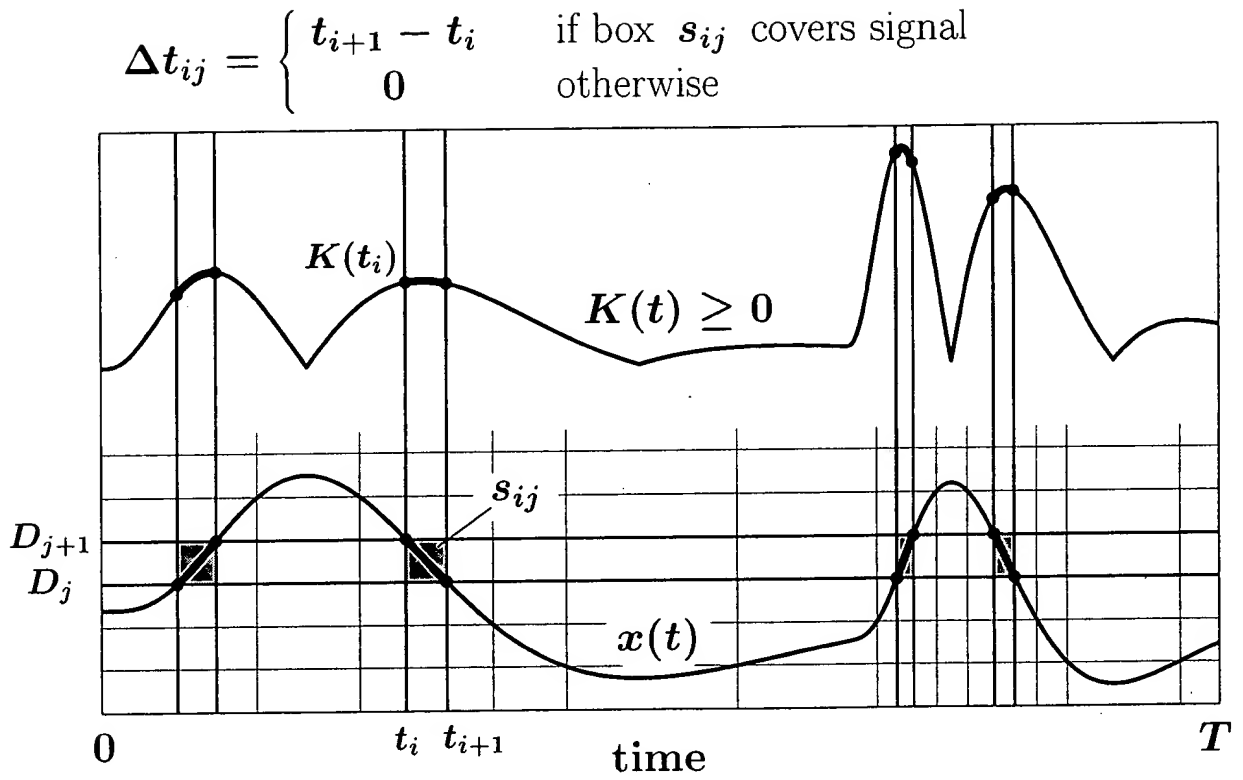


Fig. 4

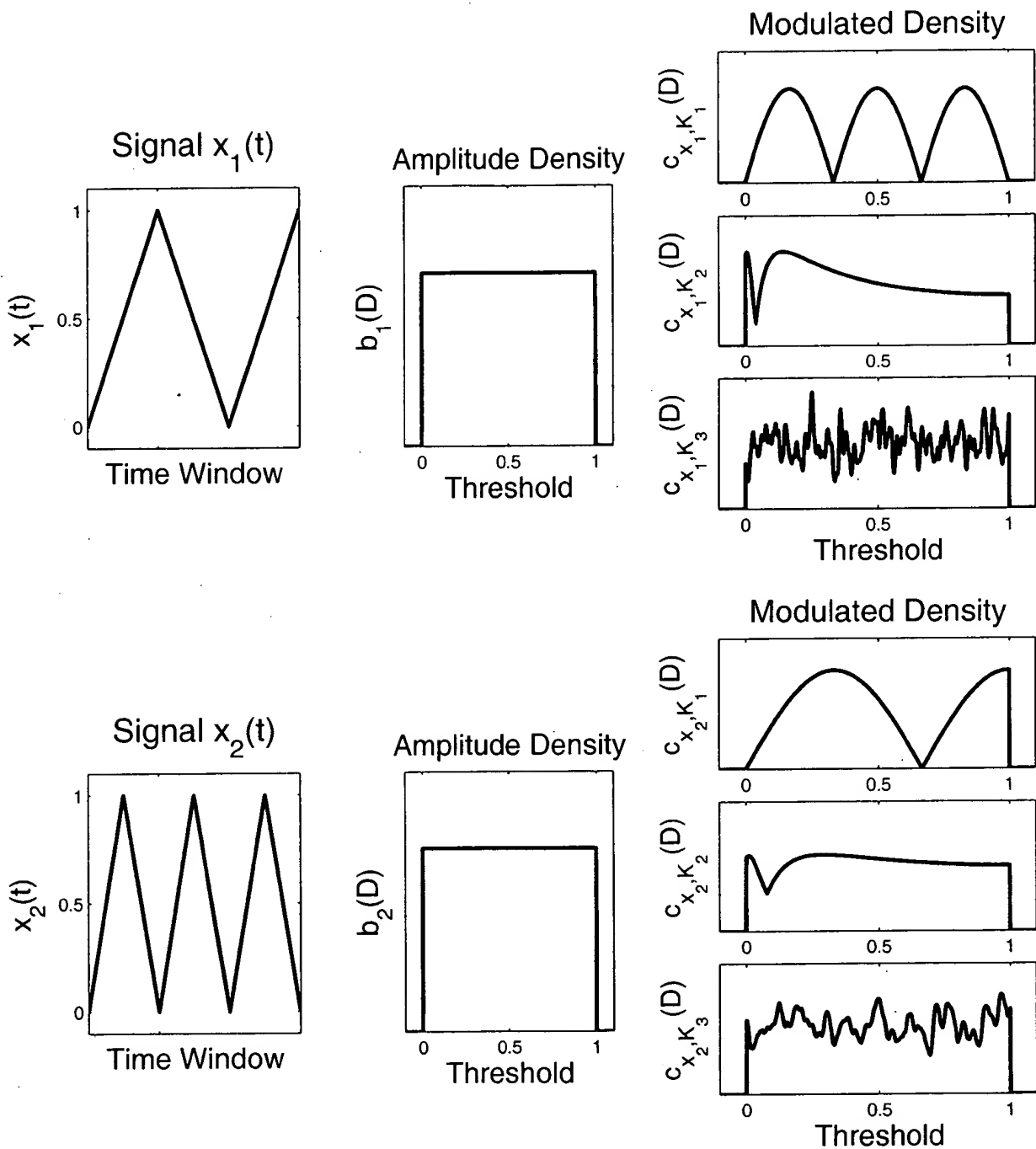


Fig. 5

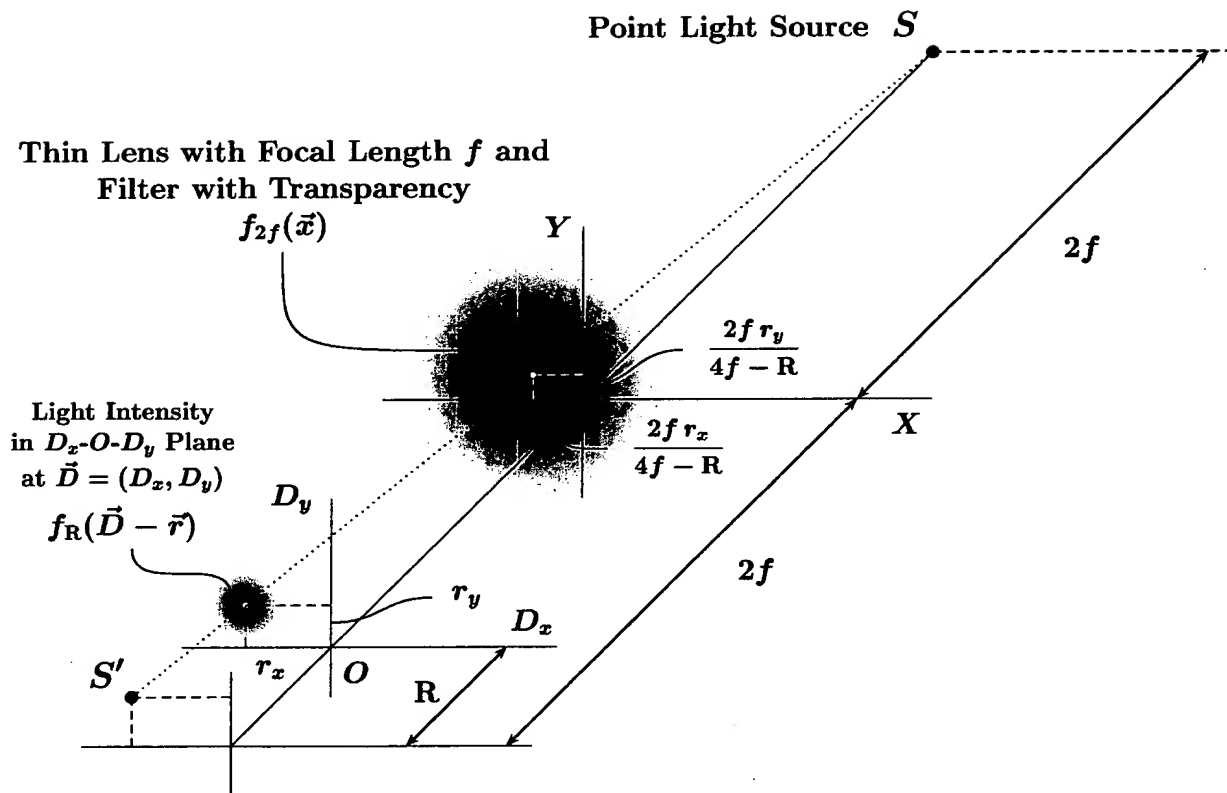
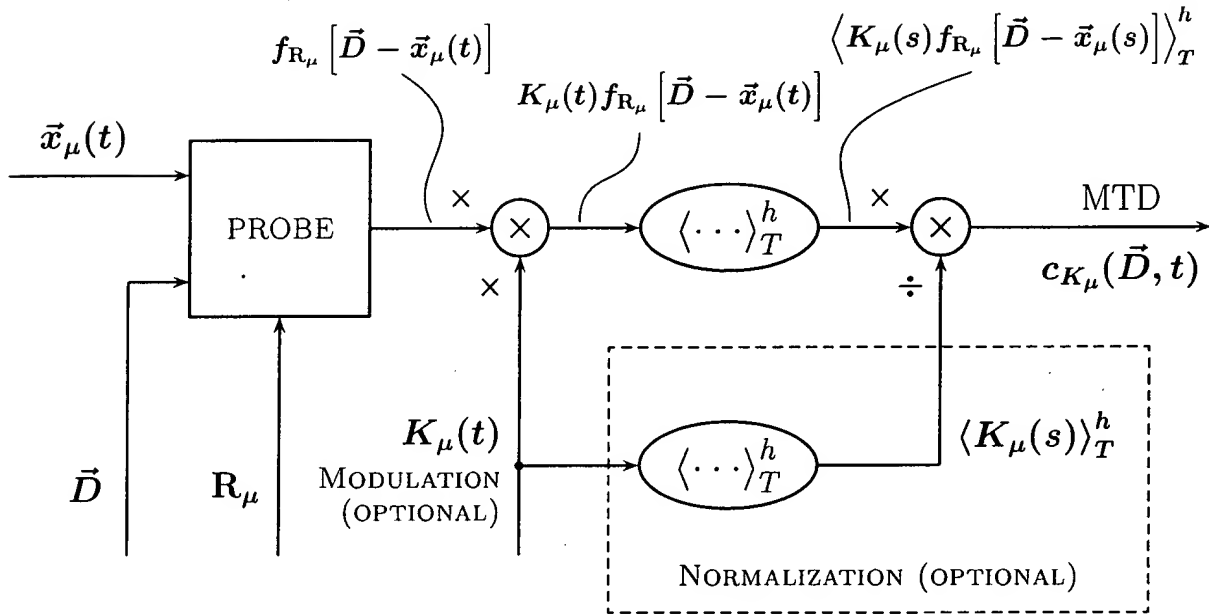


Fig. 6

MTD FOR SINGLE VARIABLE / COMPONENT OF ENSEMBLE



ACQUISITION SYSTEM: MEASURING DEVICE (PROBE)
 HAS INPUT-OUTPUT CHARACTERISTIC OF DIFFERENTIAL DISCRIMINATOR.

$\vec{x}_\mu(t)$ IS INPUT VARIABLE, SCALAR OR VECTOR, OR COMPONENT OF ENSEMBLE.
 E.G., SURFACE (IMAGE) GIVEN BY MATRIX CAN BE VIEWED AS DISCRETE ENSEMBLE.

\vec{D} AND R_μ ARE PARAMETERS OF PROBE. \vec{D} IS ANOTHER VARIABLE (NORMALLY OF
 SAME NATURE AS INPUT VARIABLE), SERVING AS UNIT, OR DATUM. R_μ IS WIDTH,
 OR RESOLUTION, PARAMETER.

$K_\mu(t)$ IS MODULATING VARIABLE, GENERALLY OF DIFFERENT NATURE THAN INPUT
 VARIABLE. E.G., $K_\mu(t) = \text{constant}$ LEADS TO MTD AS AMPLITUDE DENSITY, AND
 $K_\mu(t) = |\vec{x}_\mu(t)|$ LEADS TO MTD AS COUNTING DENSITY/RATE.

Fig. 7

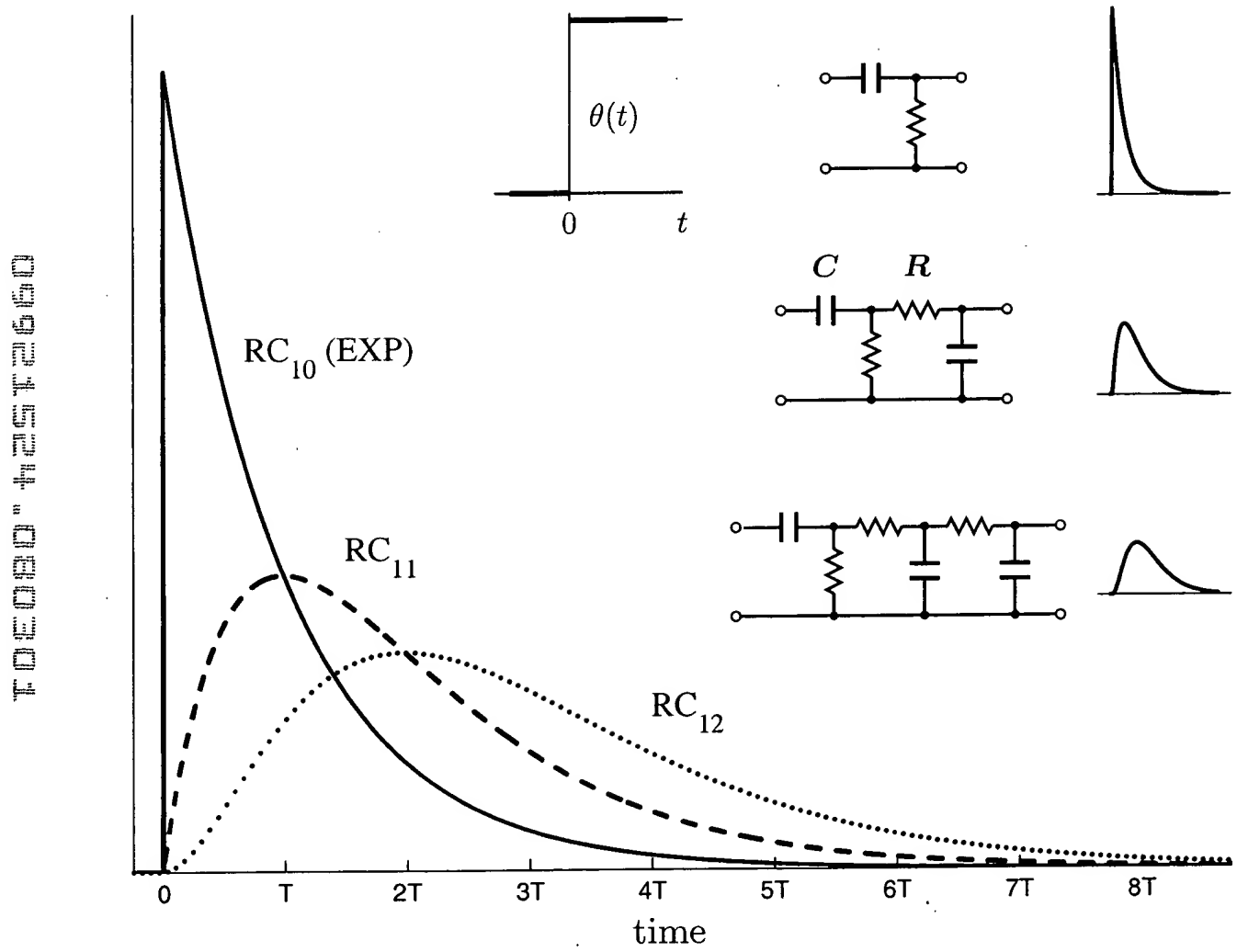


Fig. 8

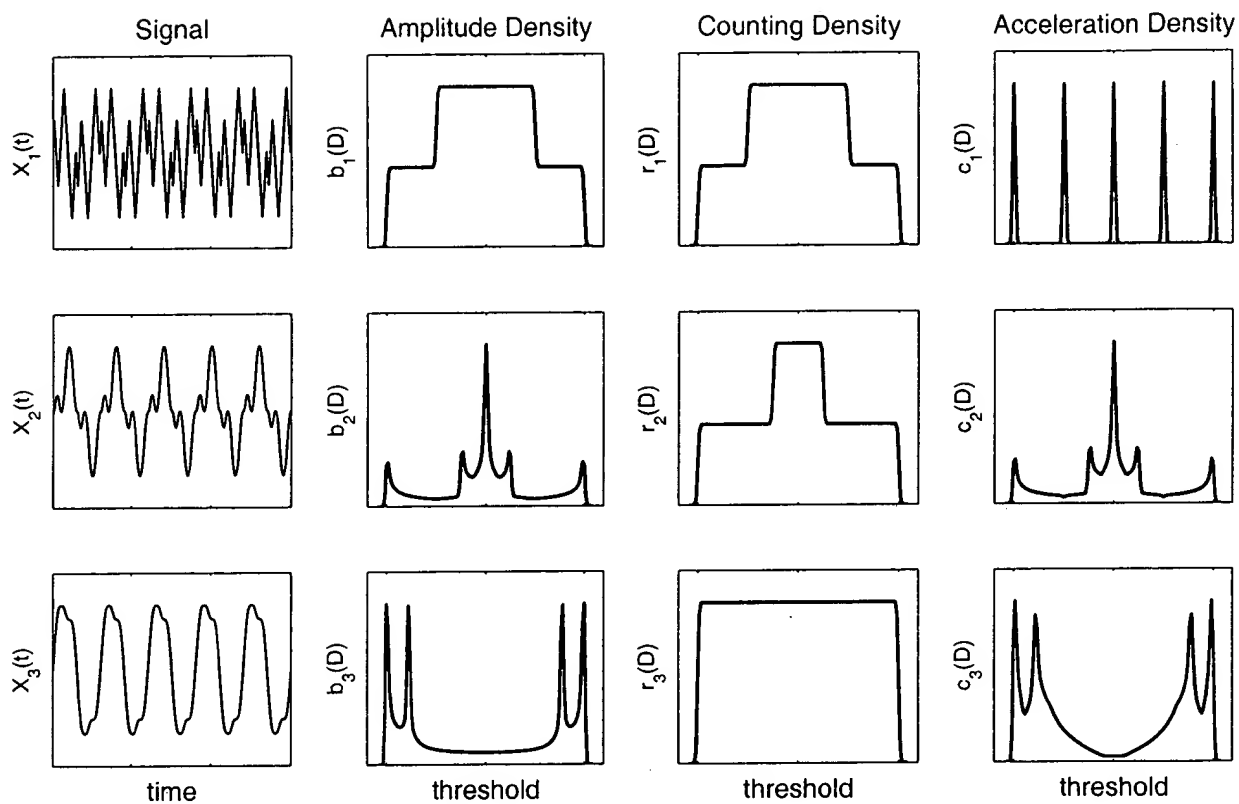


Fig. 9 a

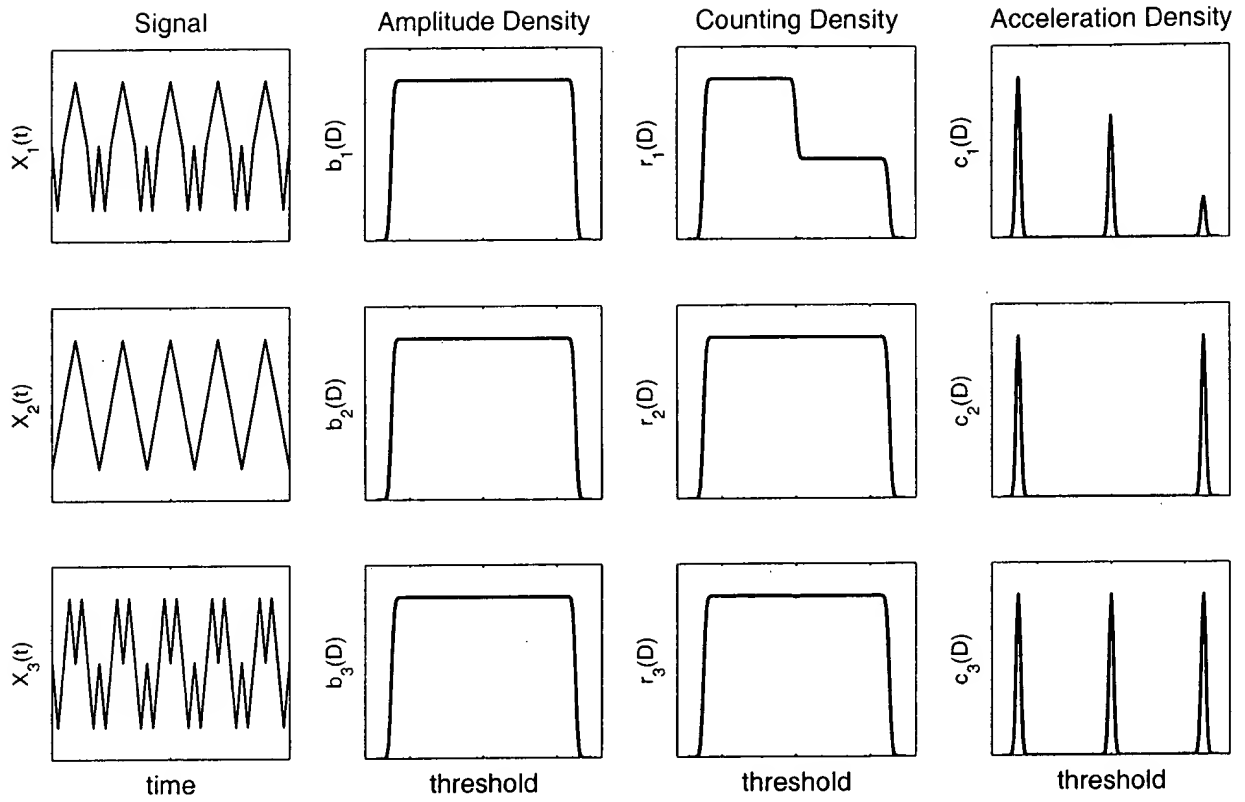


Fig. 9b

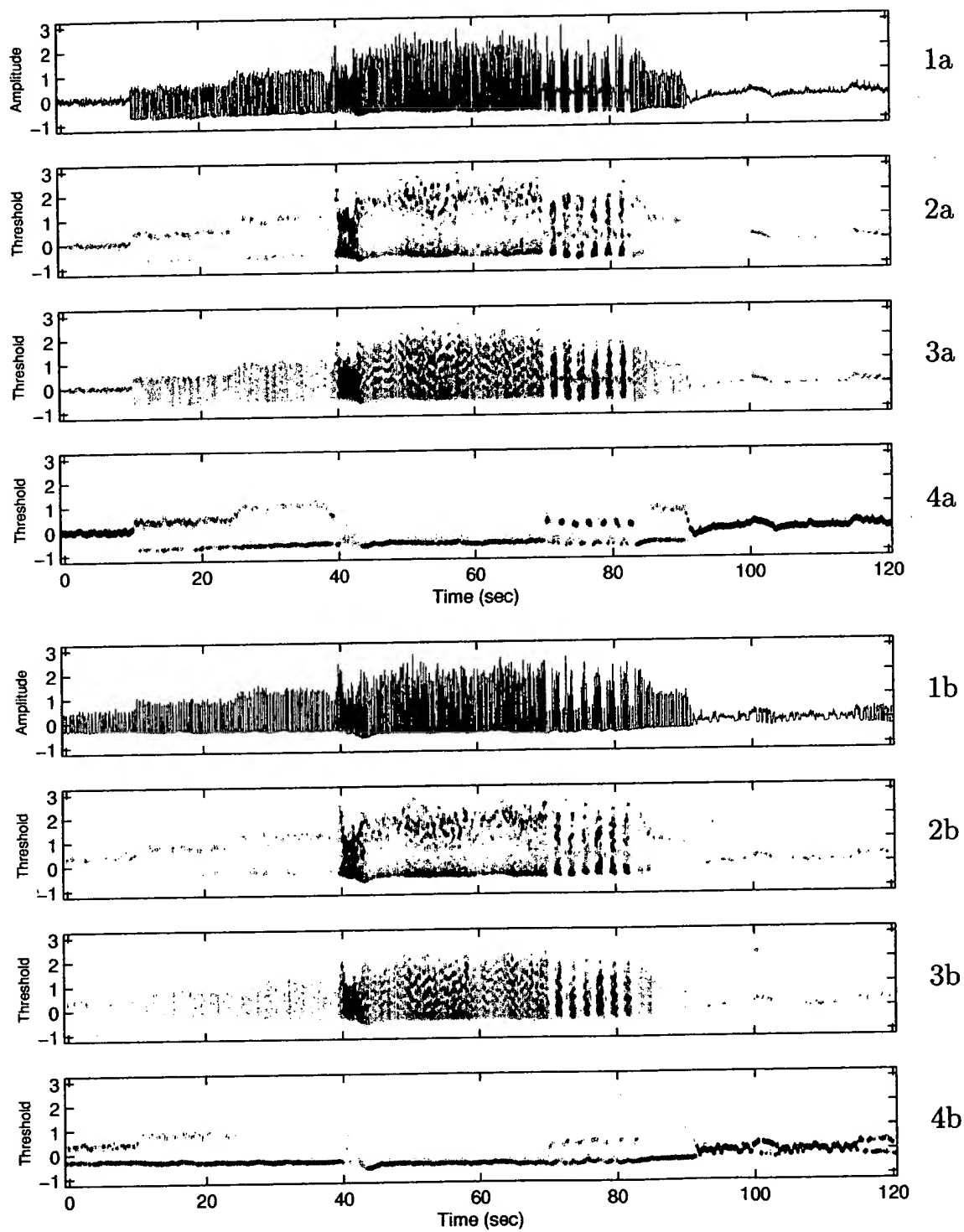


Fig. 10

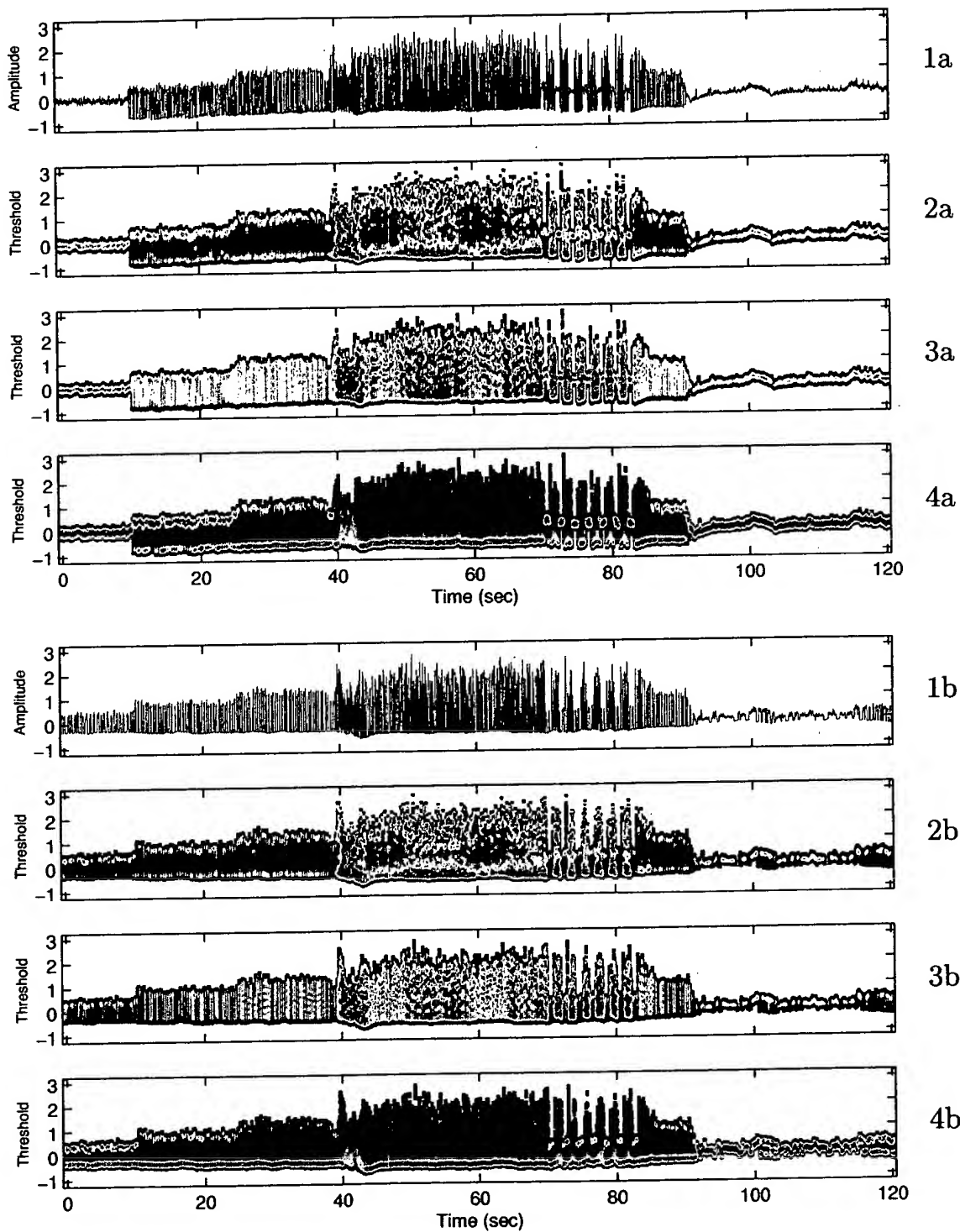


Fig. 10

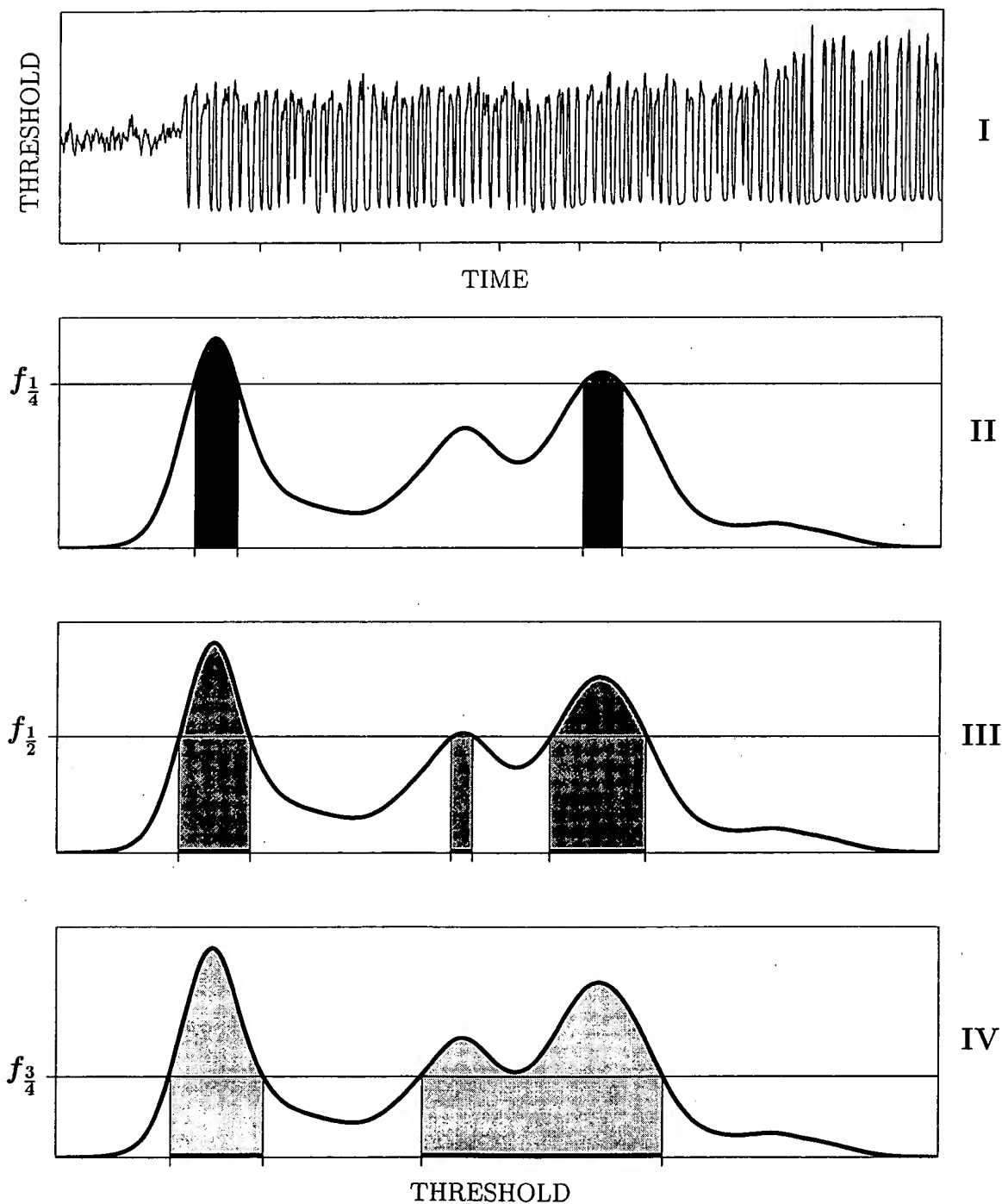


Fig. 11

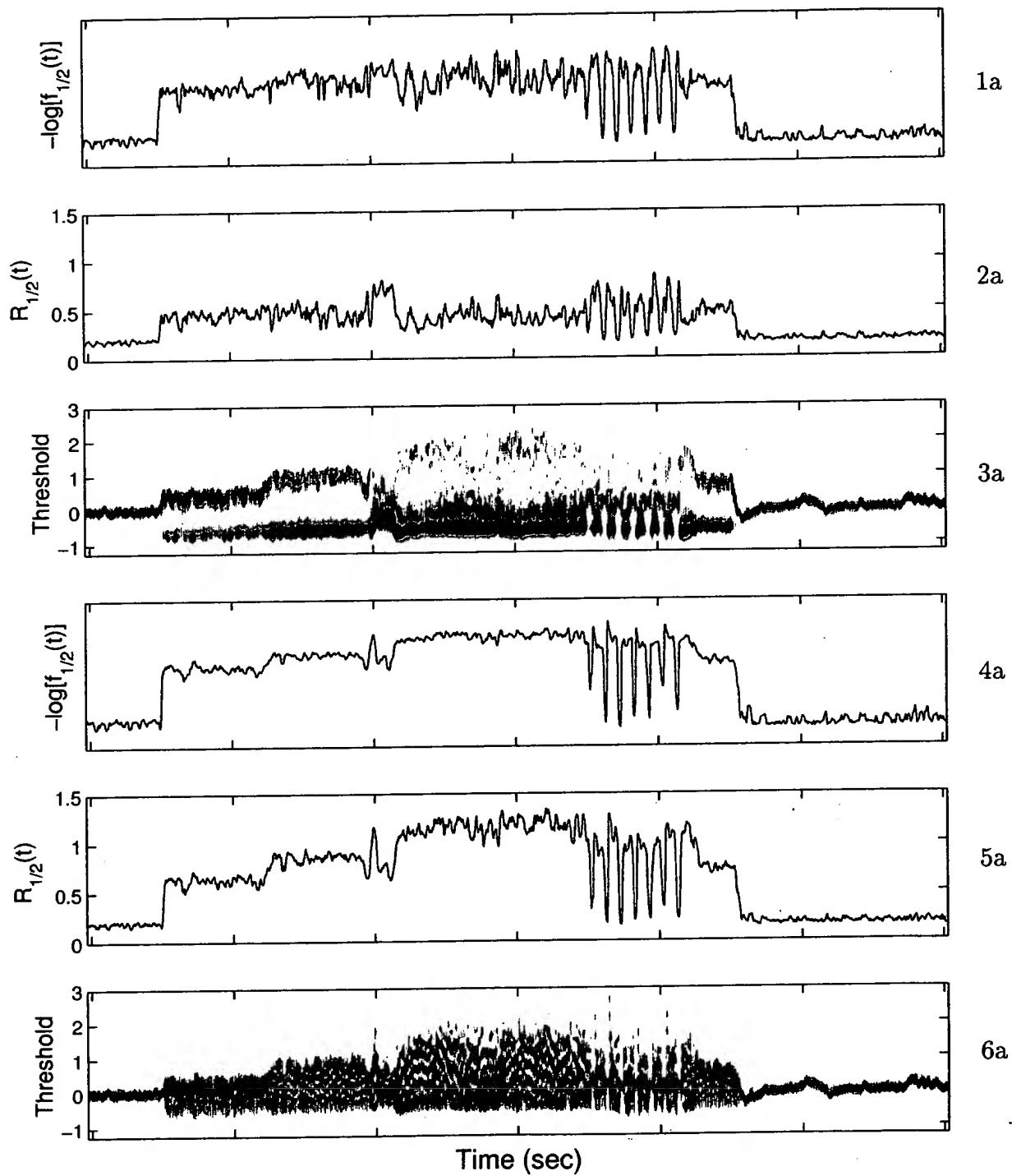


Fig. 12a

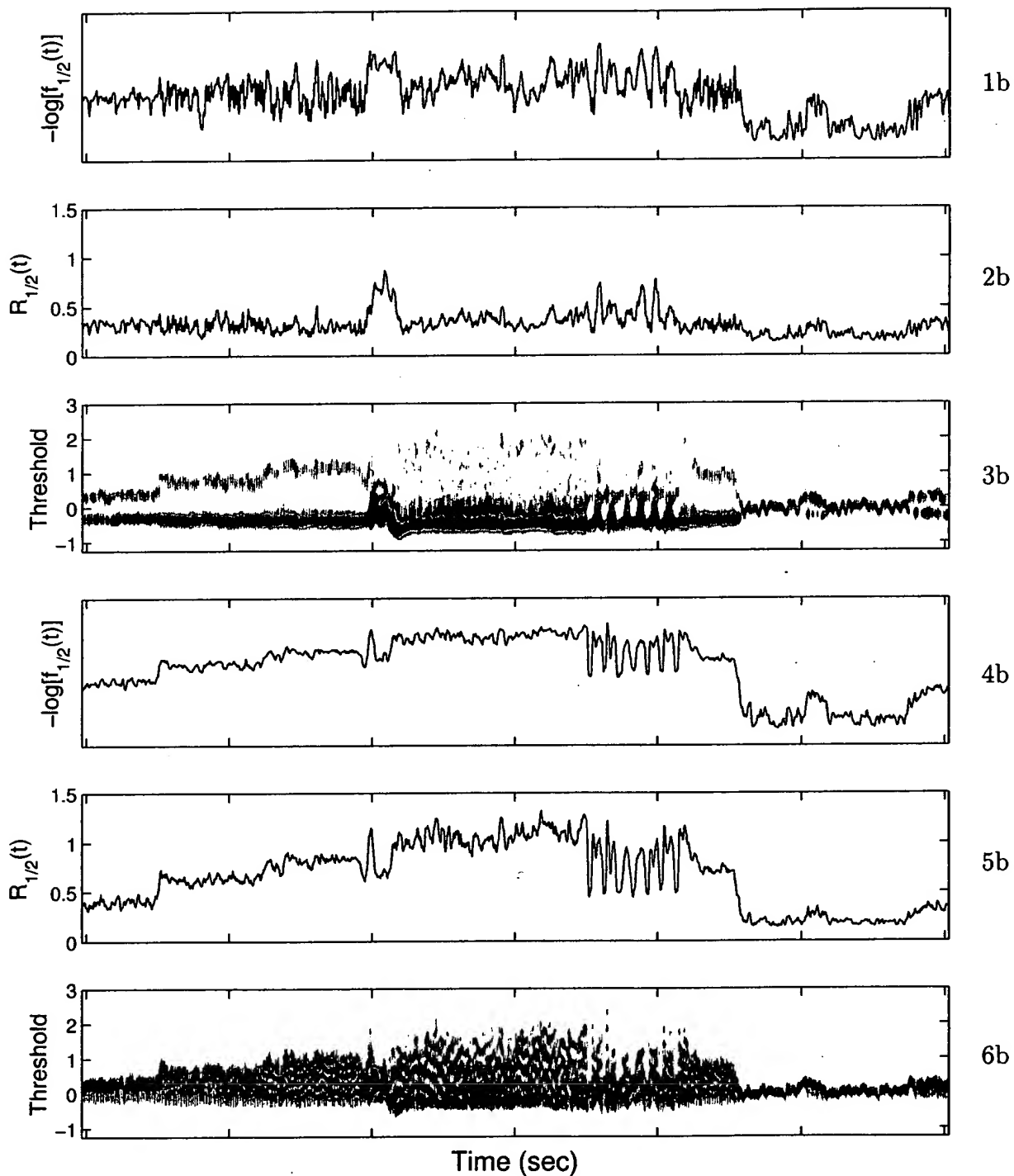


Fig. 12 b

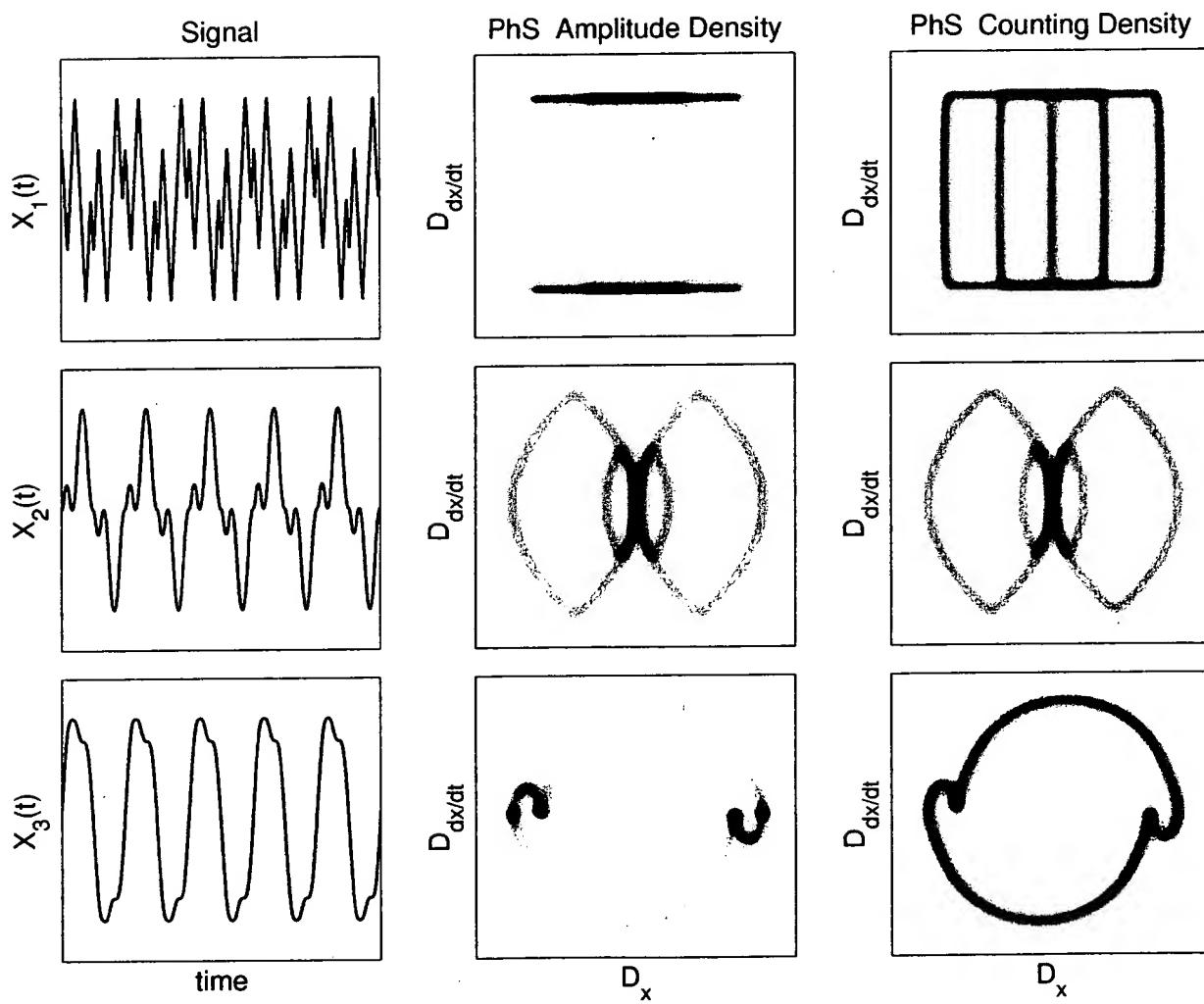
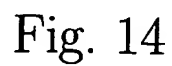


Fig. 13



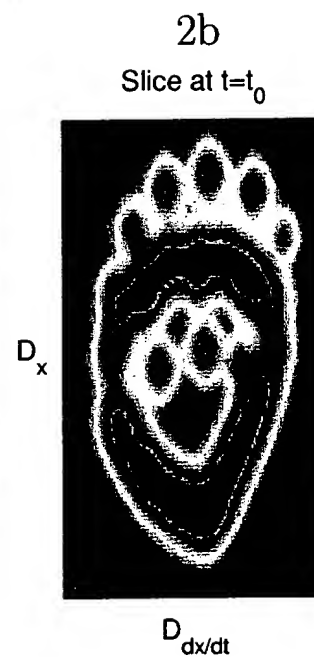
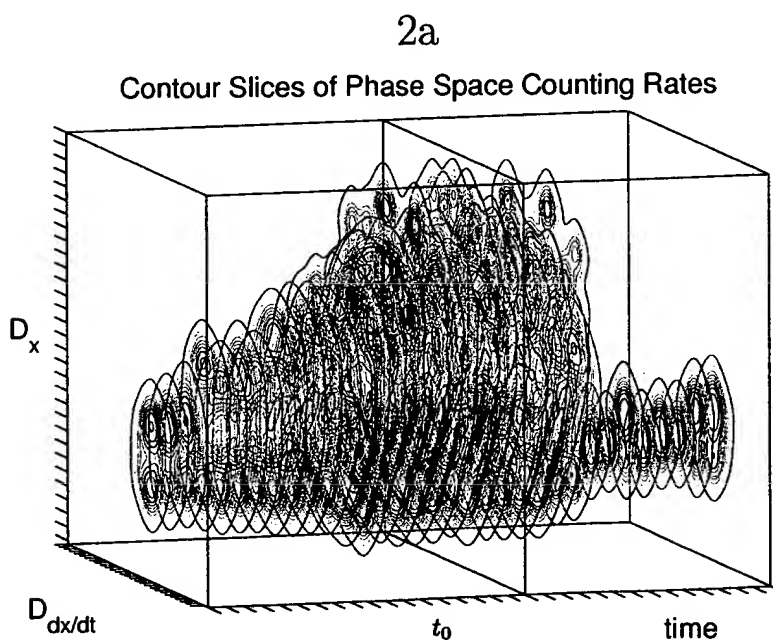
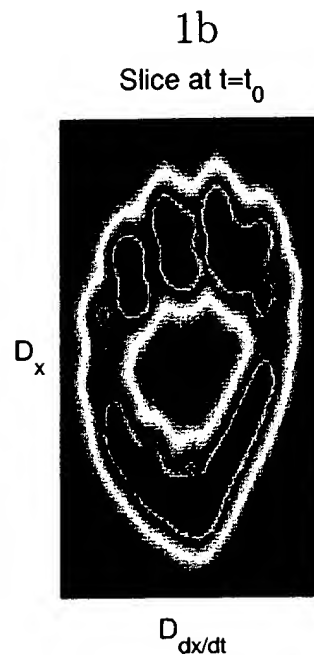
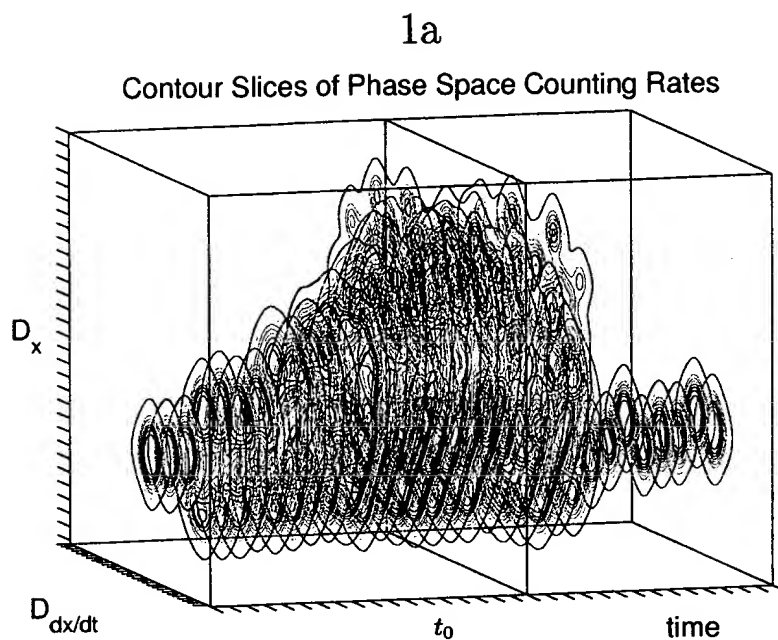
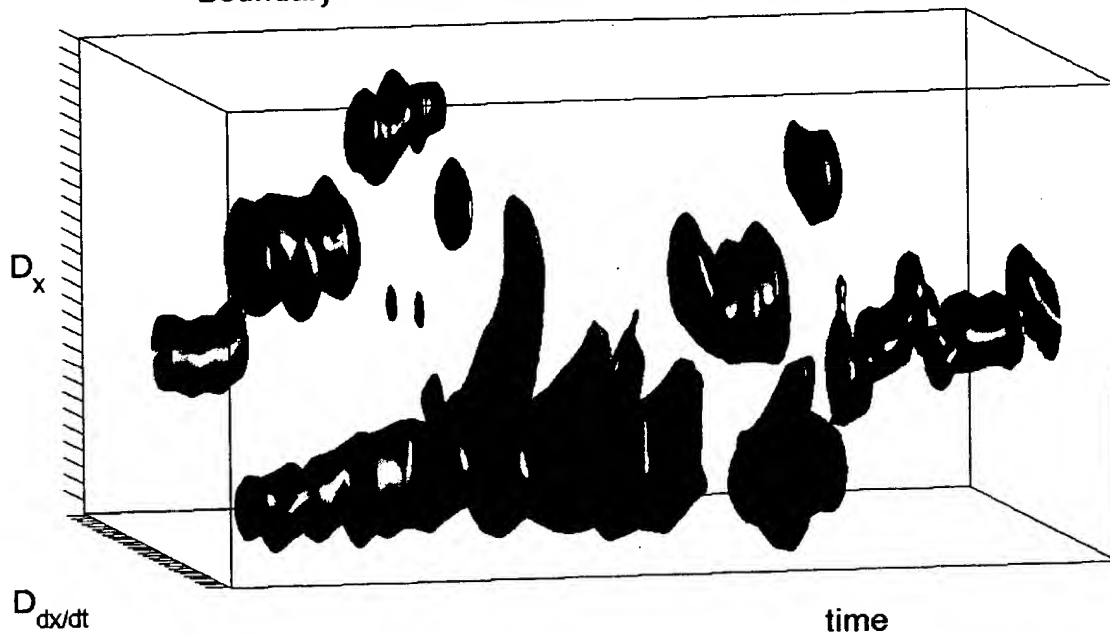


Fig. 15

Boundary of Median Domain for PhS Amplitude Density



Boundary of Median Domain for PhS Amplitude Density

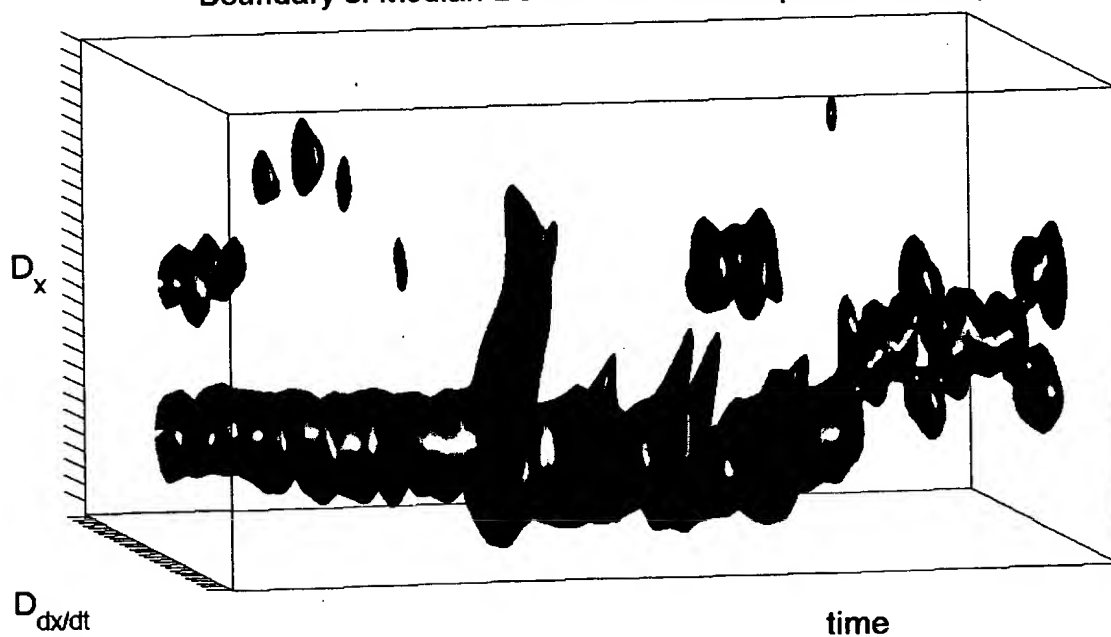
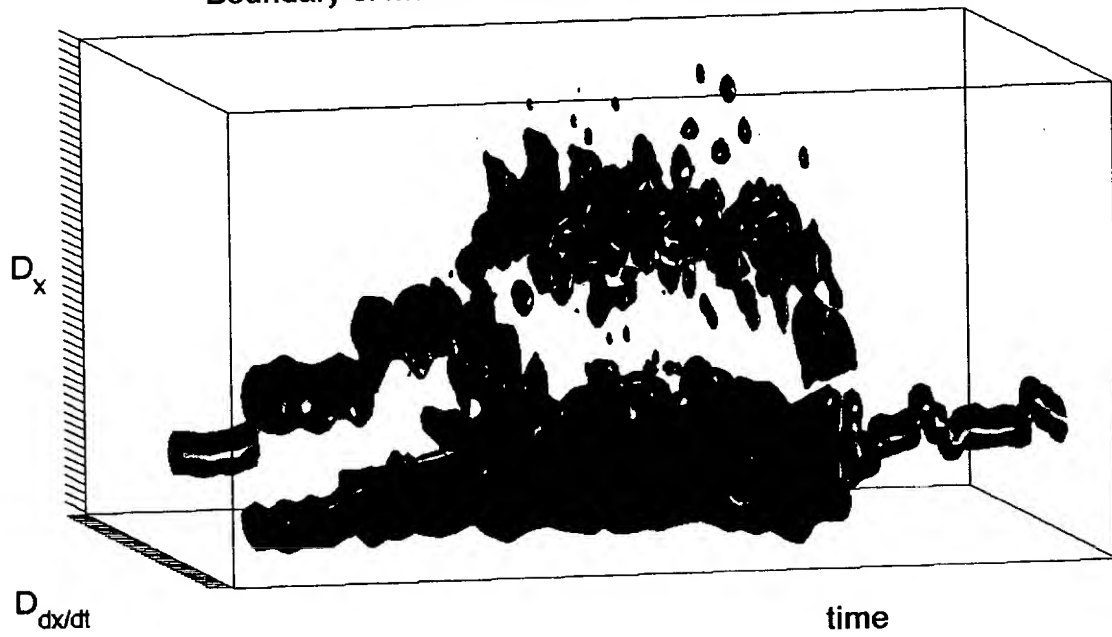


Fig. 16

Boundary of Median Domain for PhS Counting Density



Boundary of Median Domain for PhS Counting Density

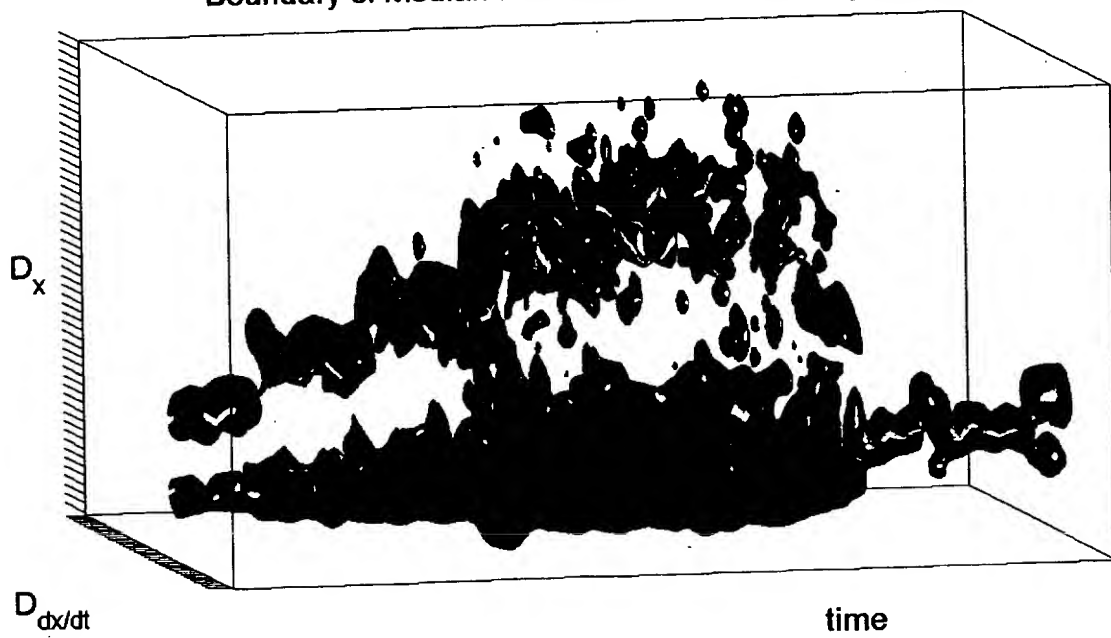


Fig. 17

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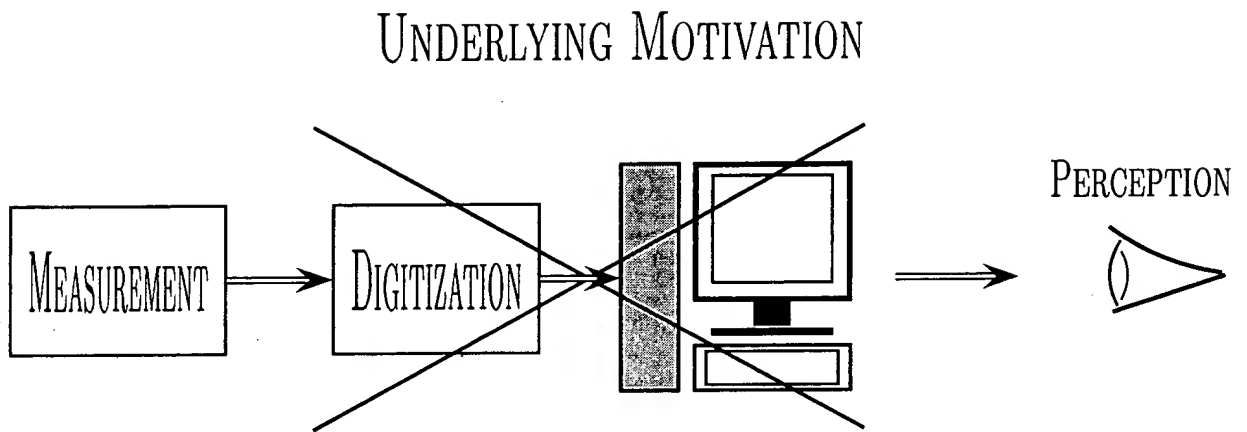


Fig. 18

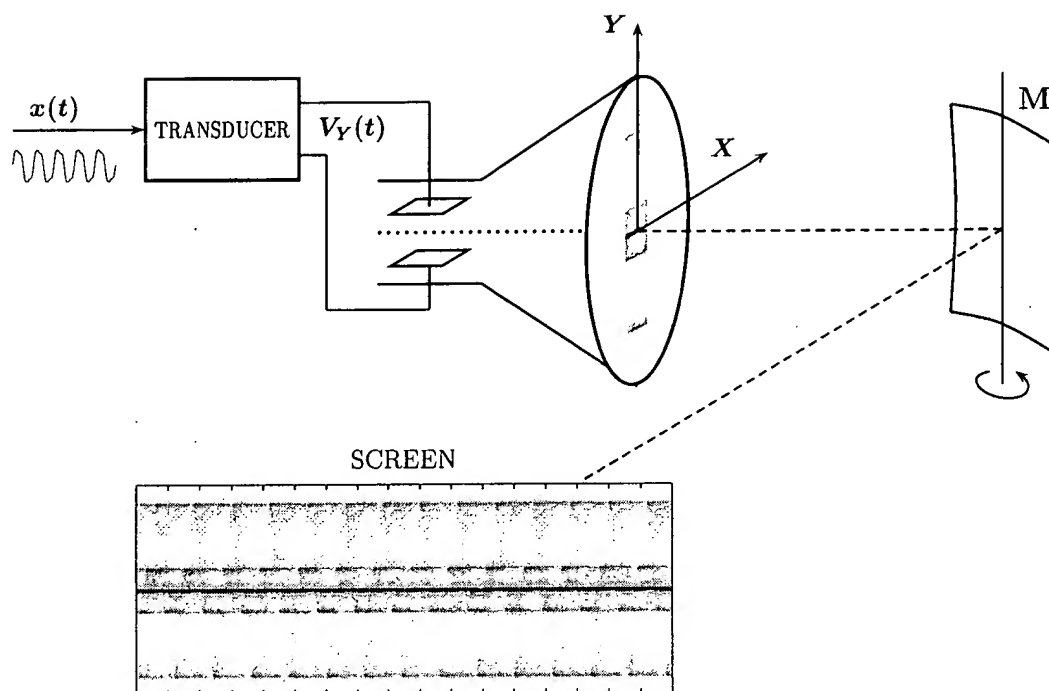


Fig. 19

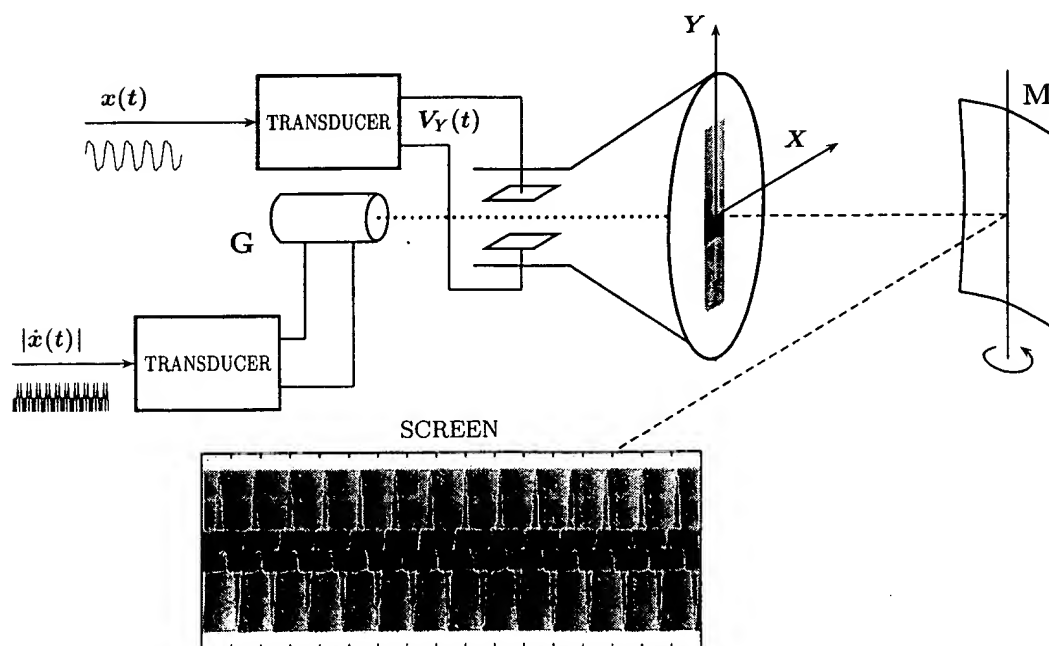


Fig. 20

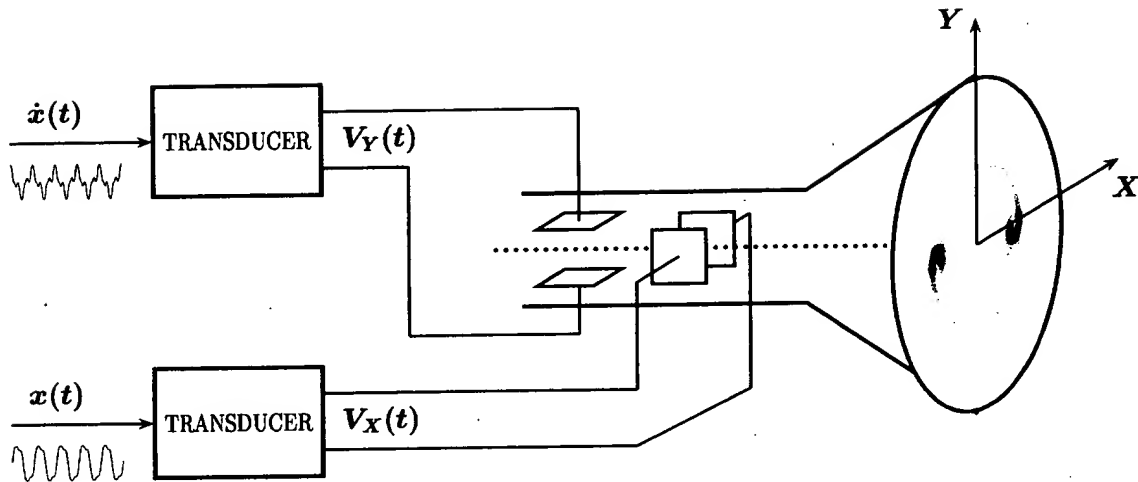


Fig. 21

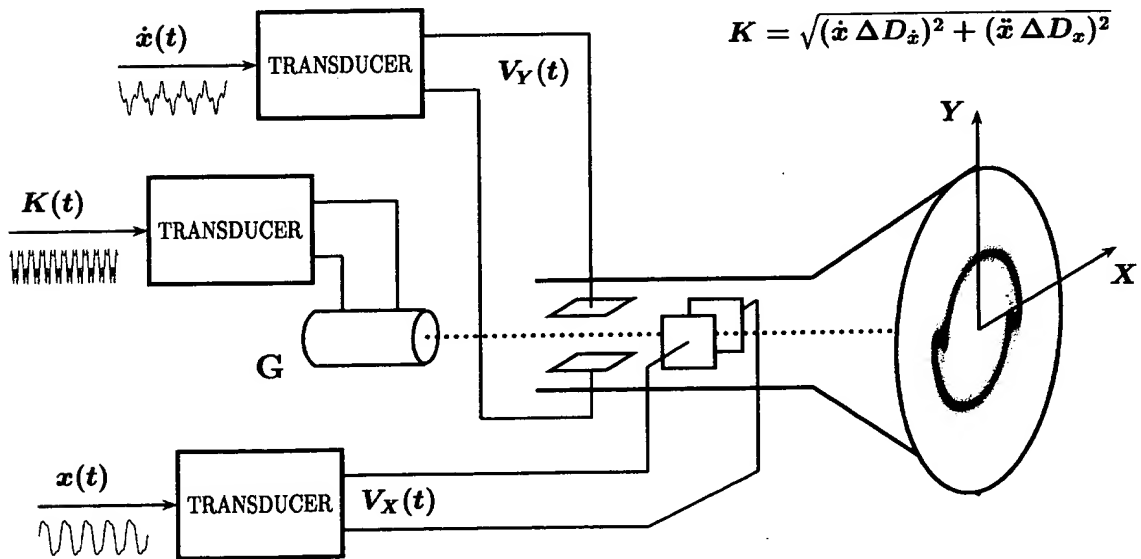


Fig. 22

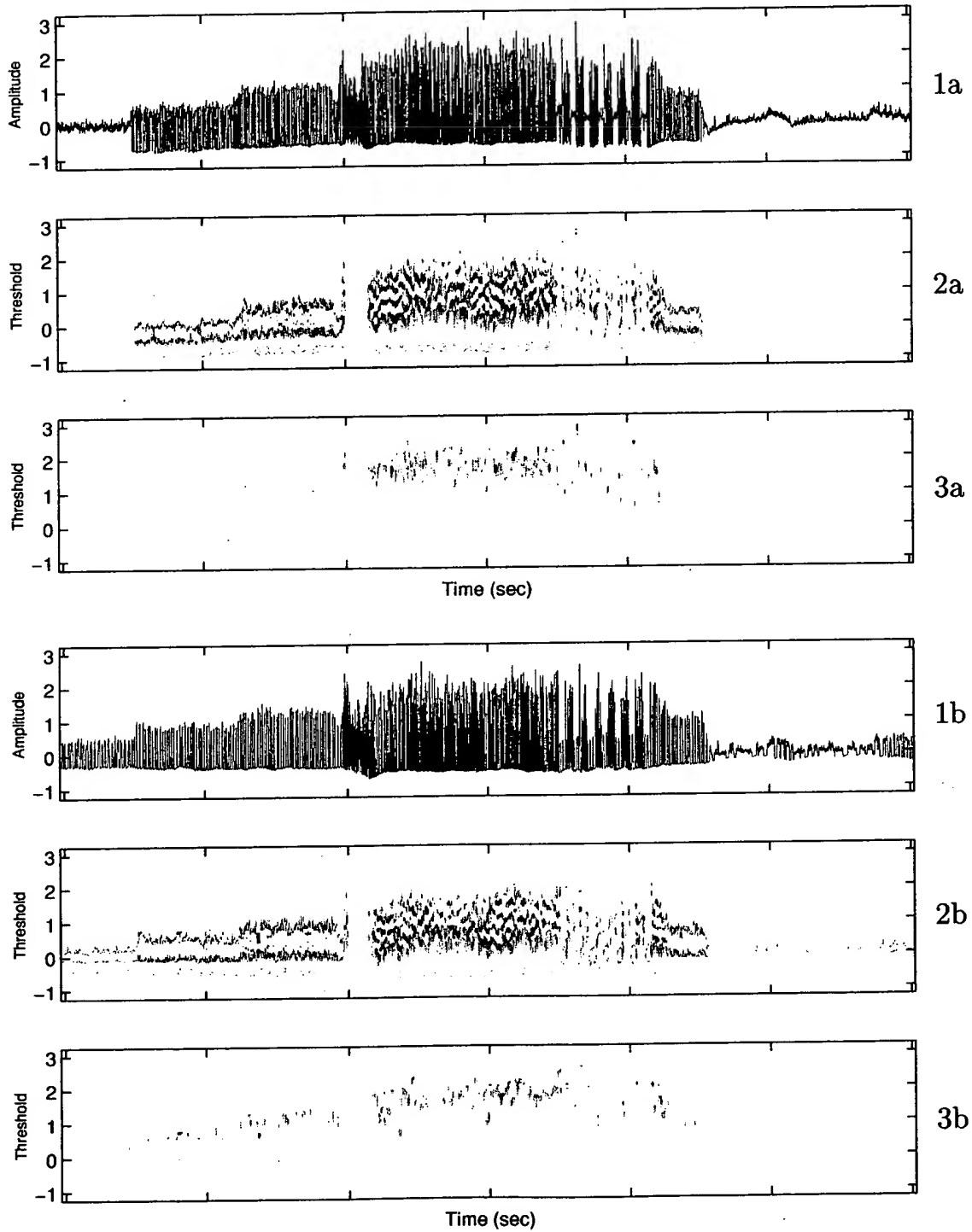


Fig. 23

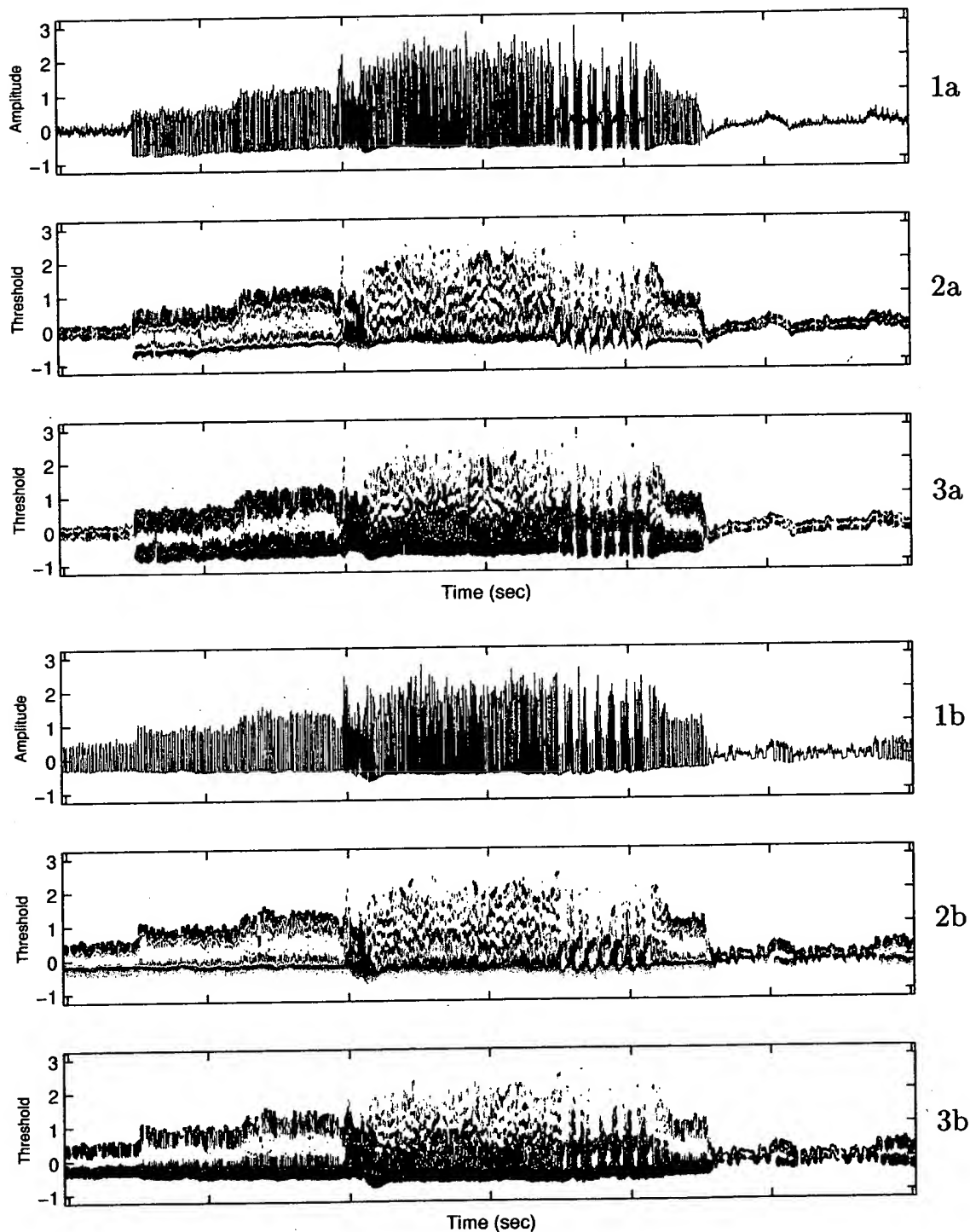


Fig. 23

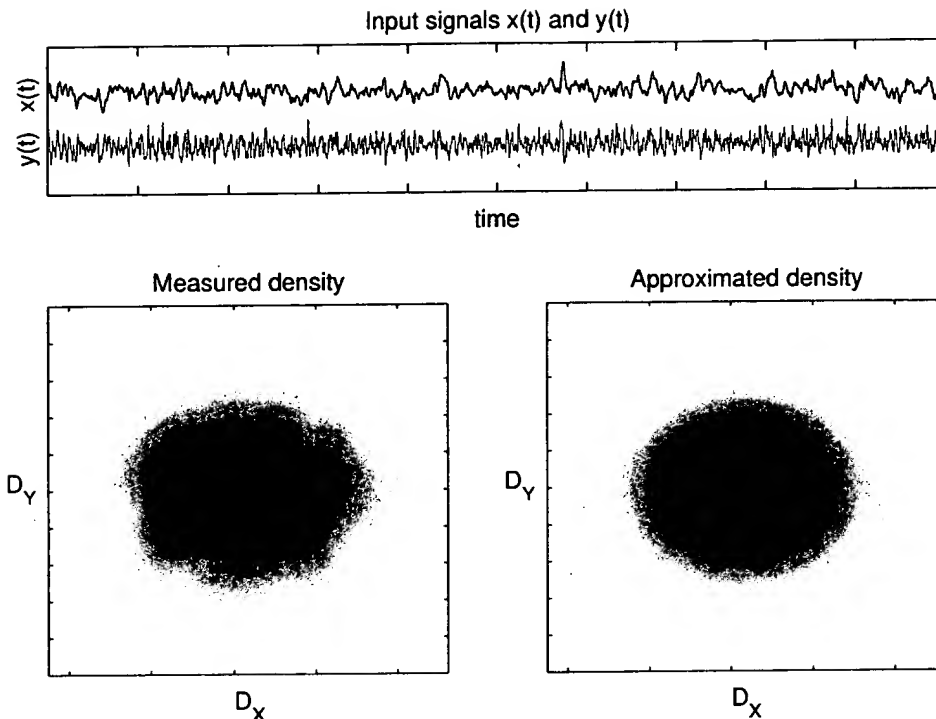


Fig. 24

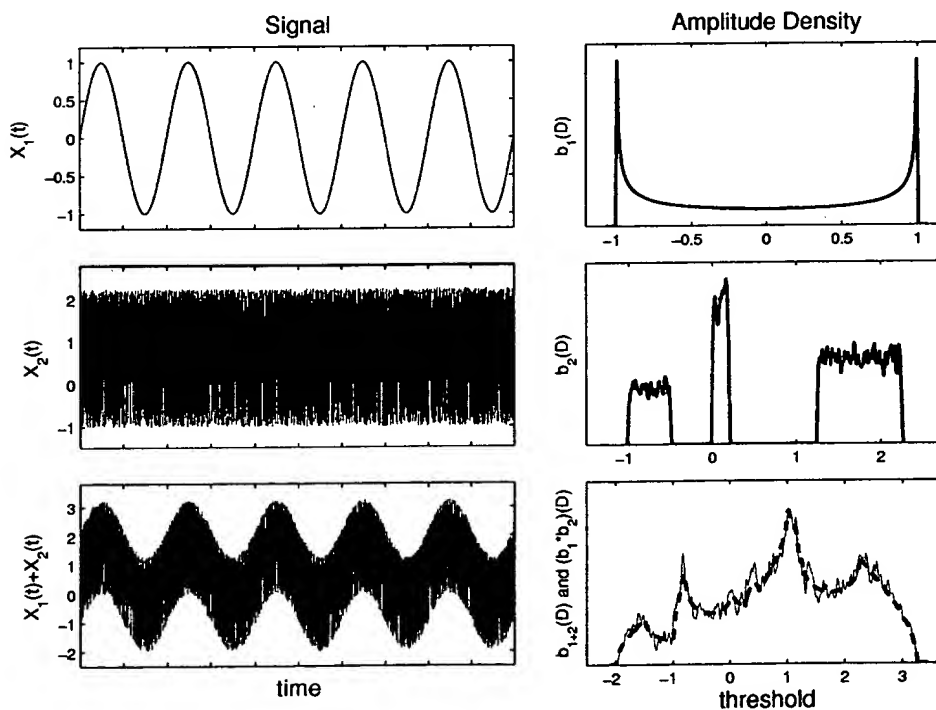


Fig. 25

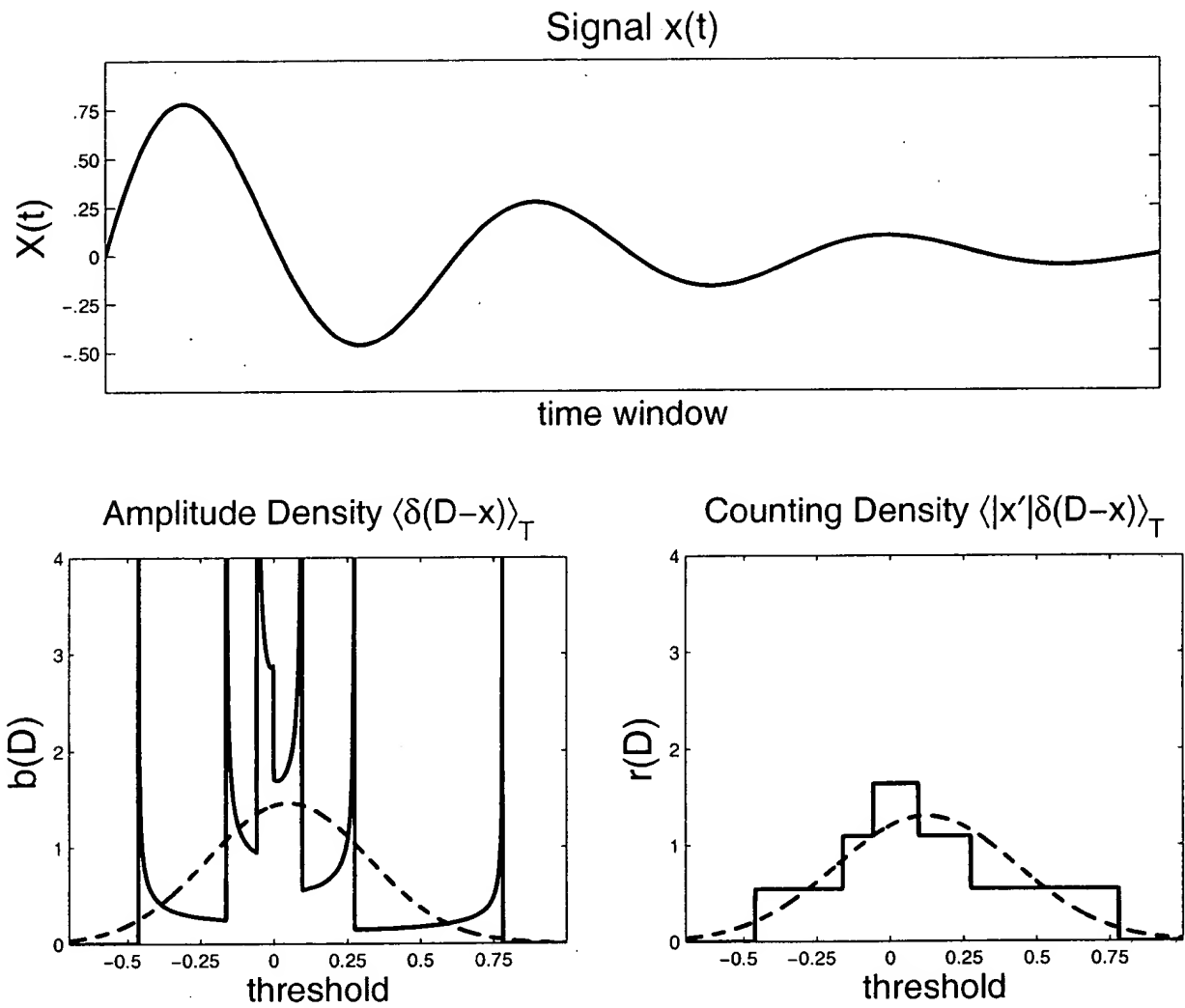


Fig. 26

099554 099554 099554

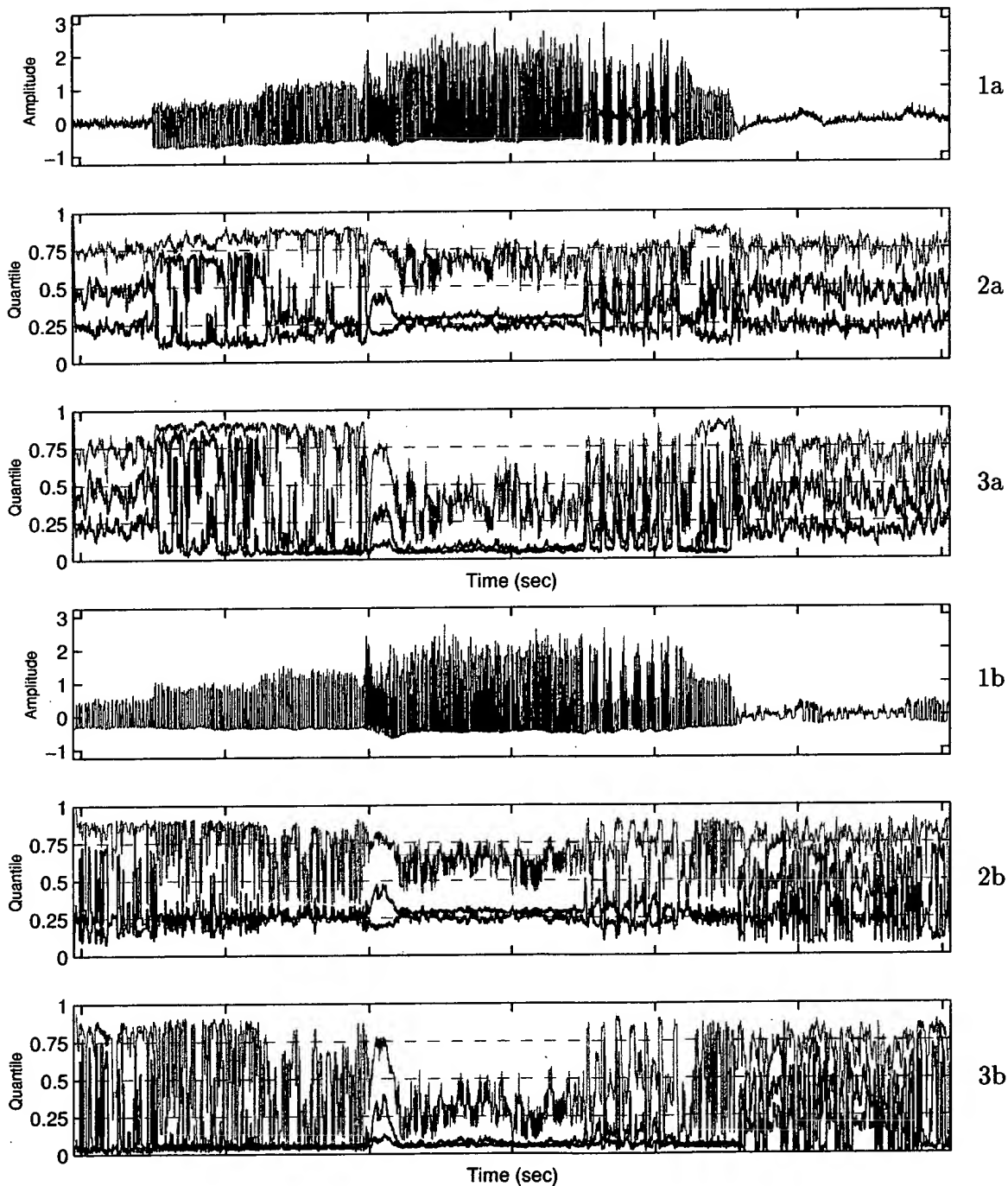


Fig. 27

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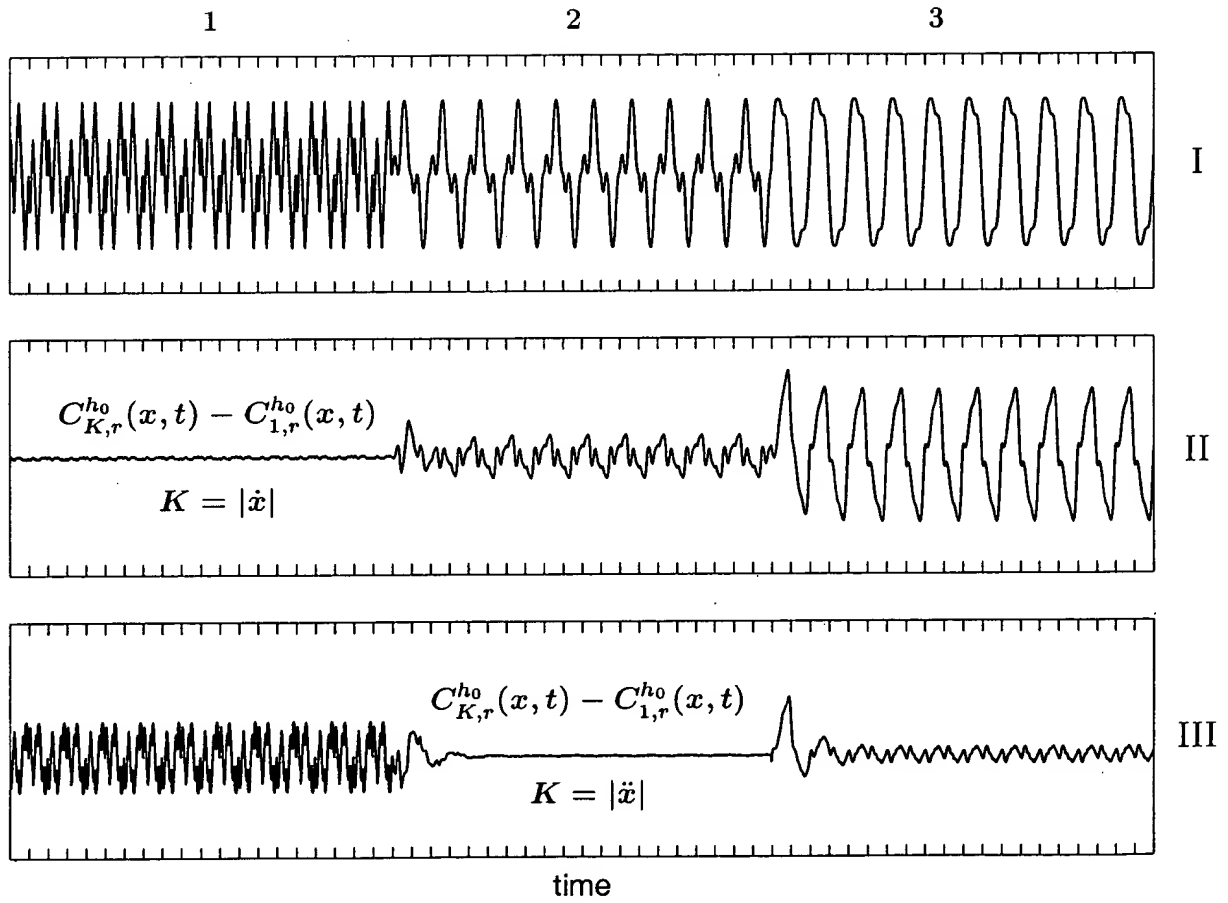
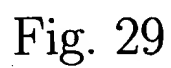


Fig. 28



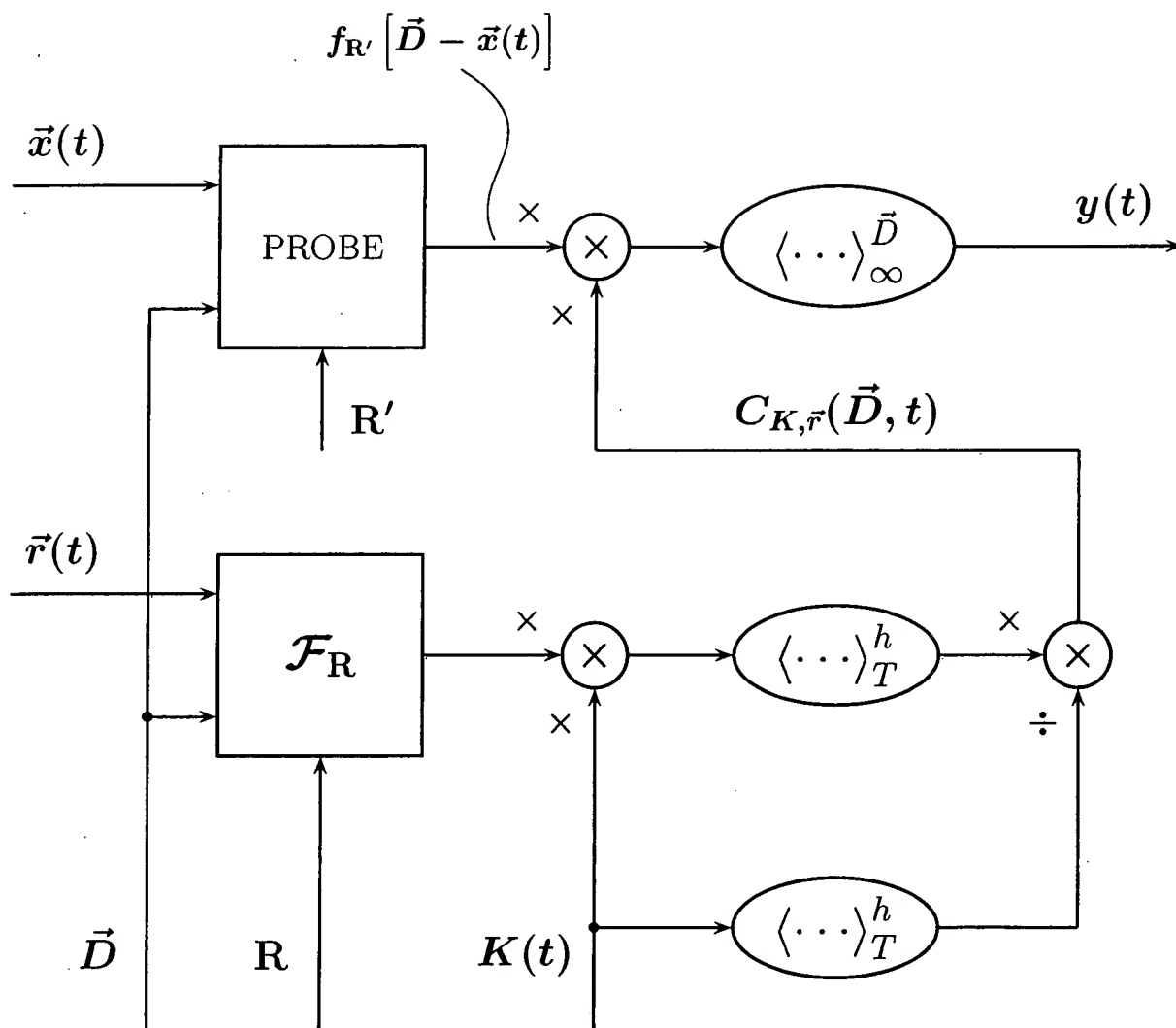


Fig. 30

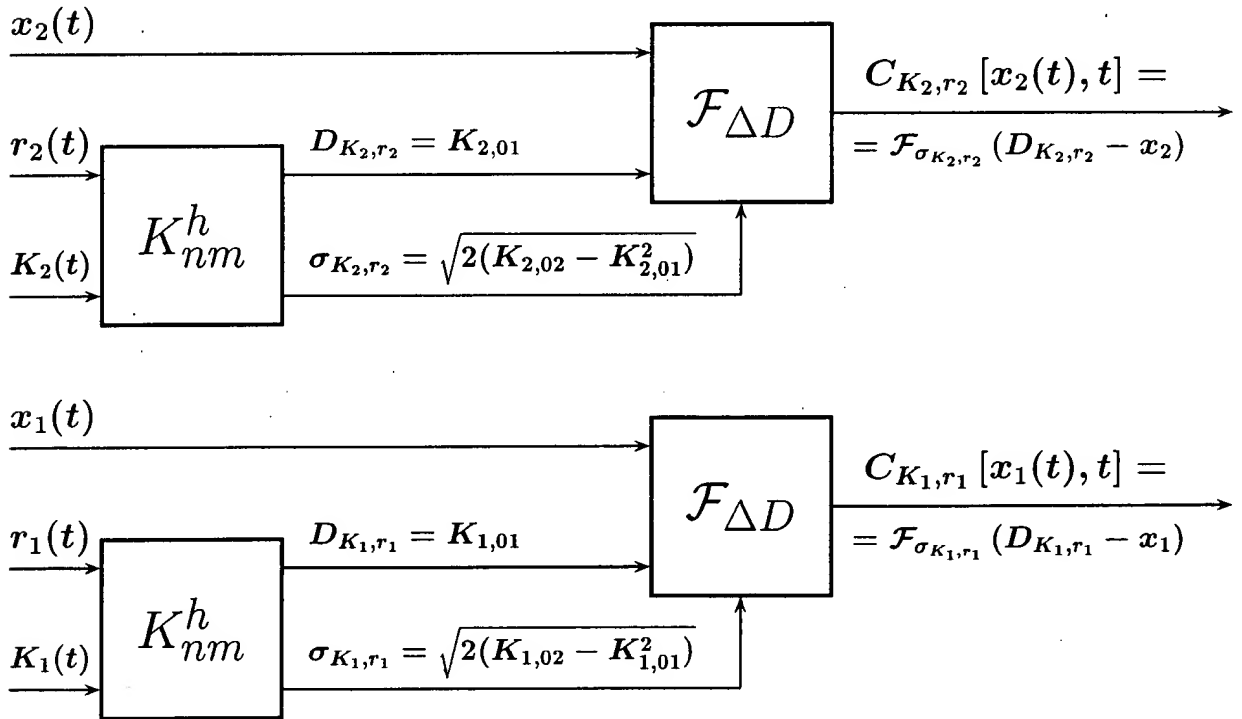
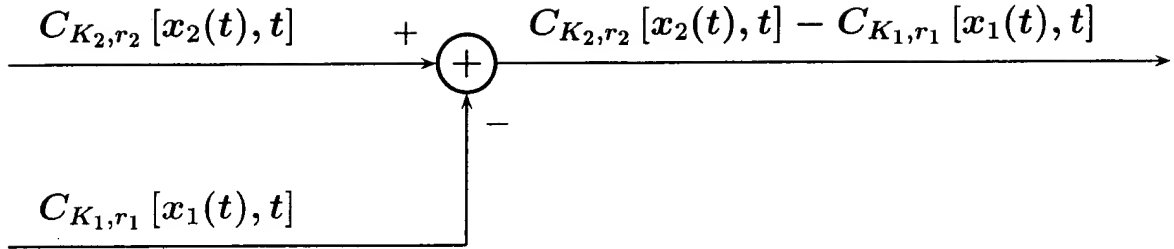


Fig. 31

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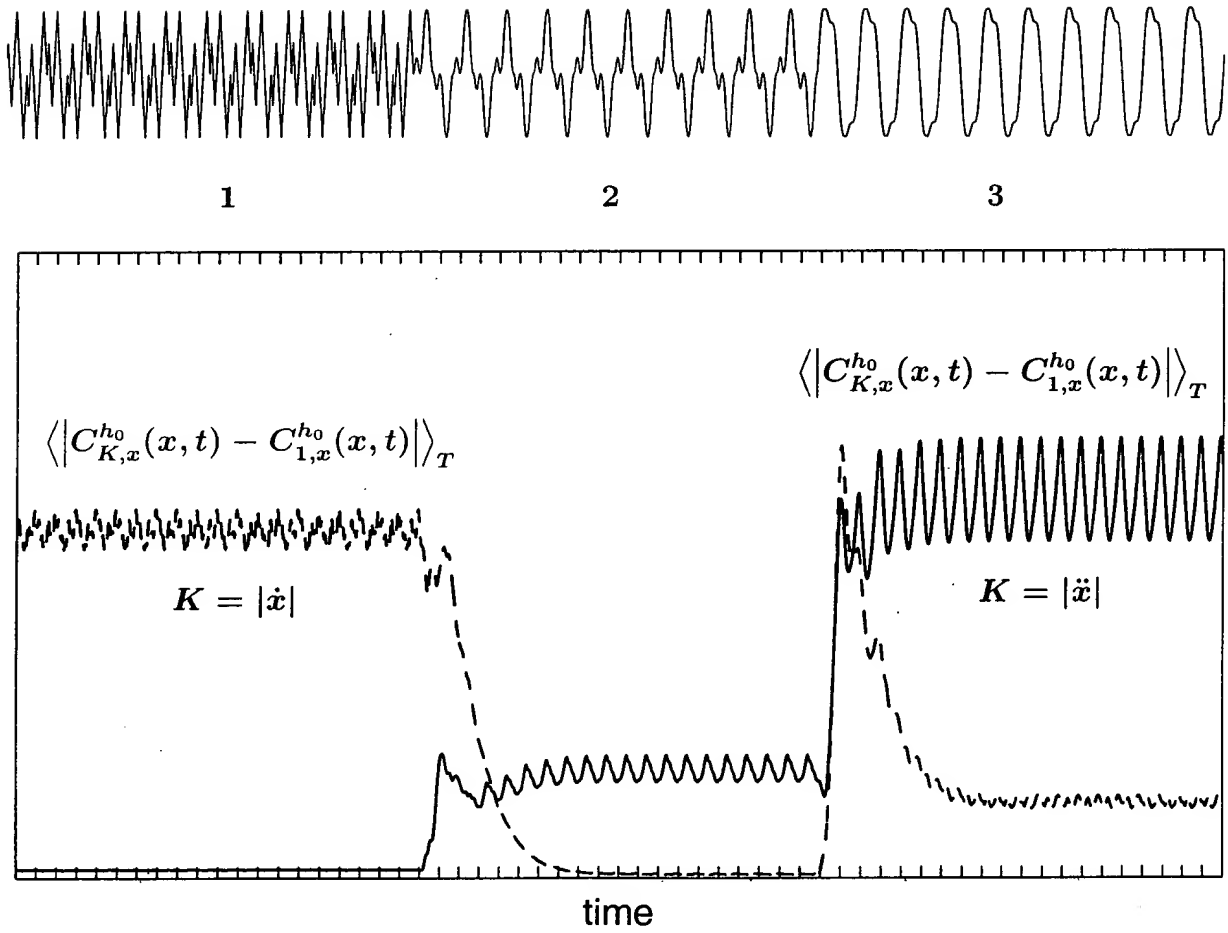


Fig. 32

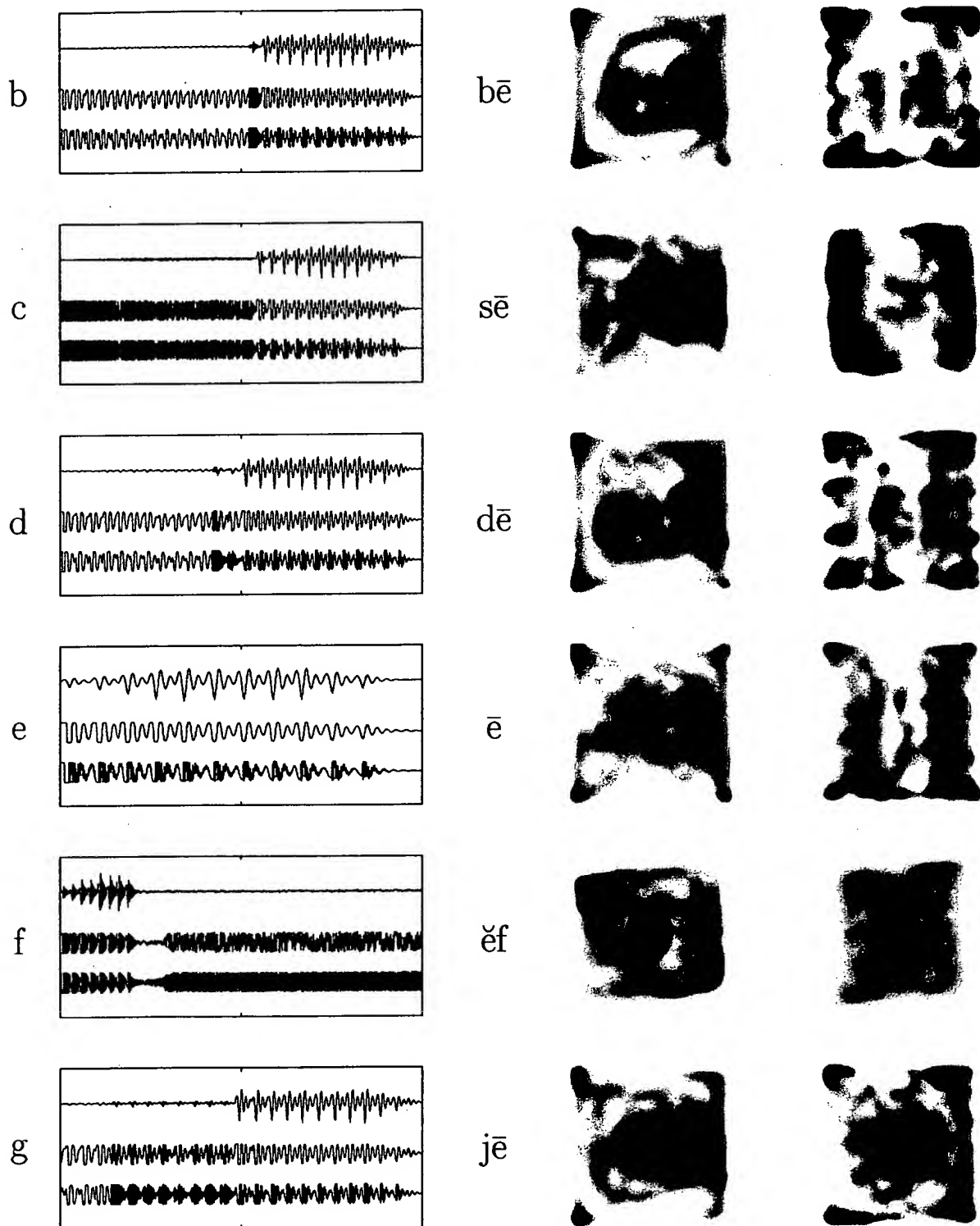


Fig. 33

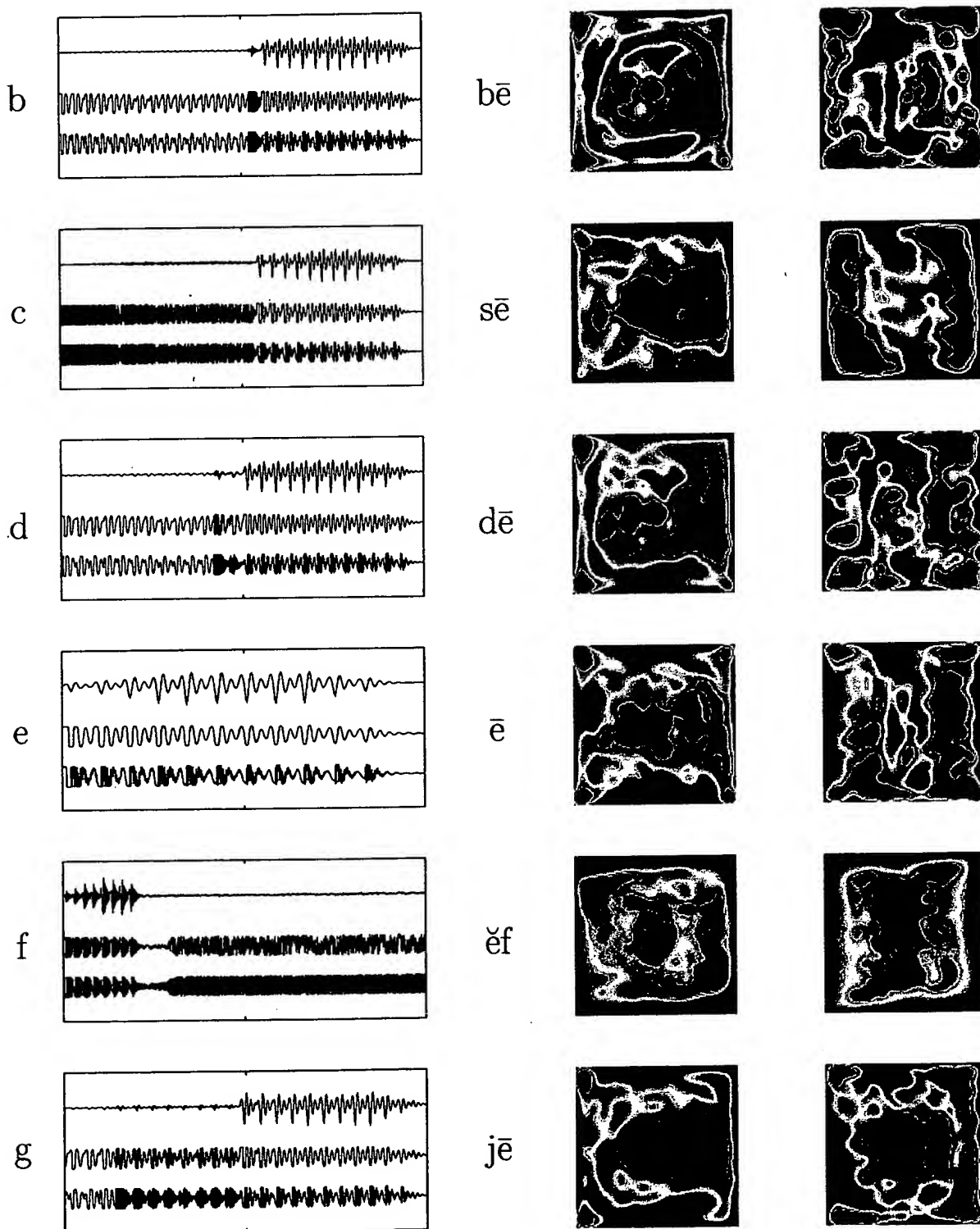


Fig. 33

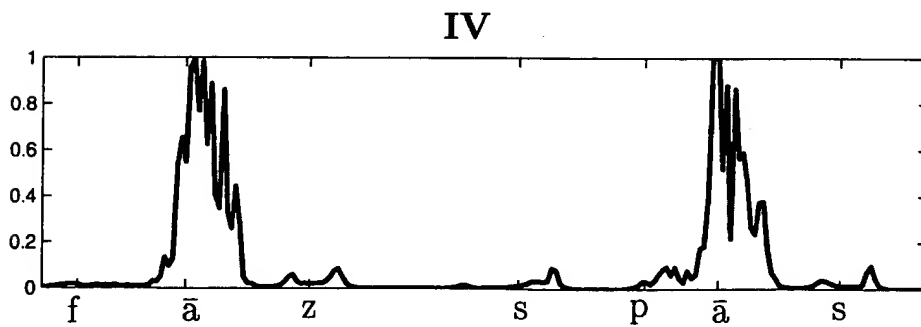
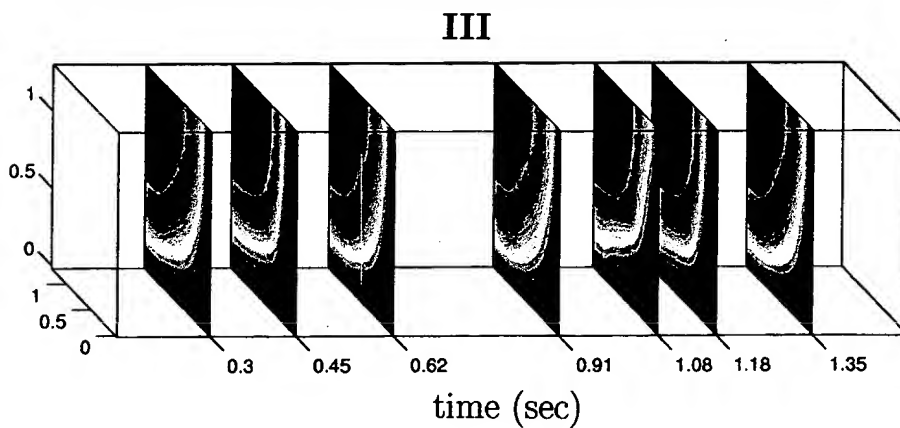
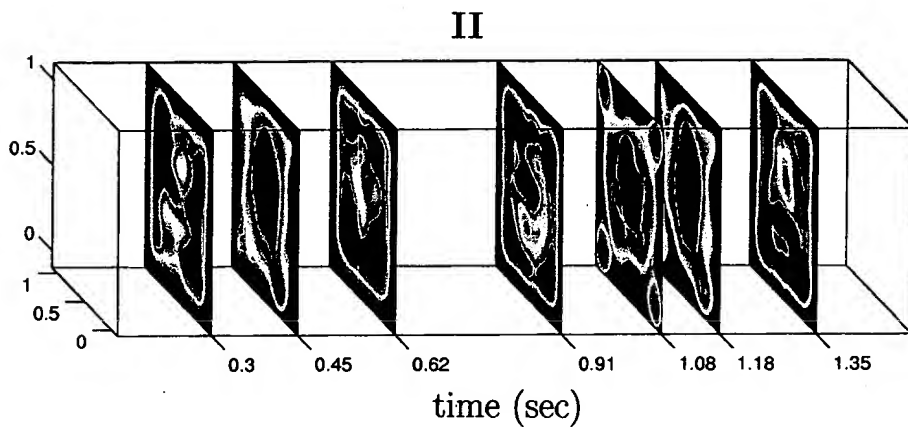
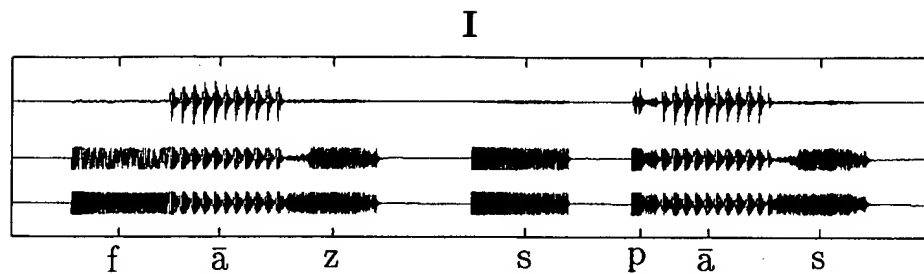


Fig. 34

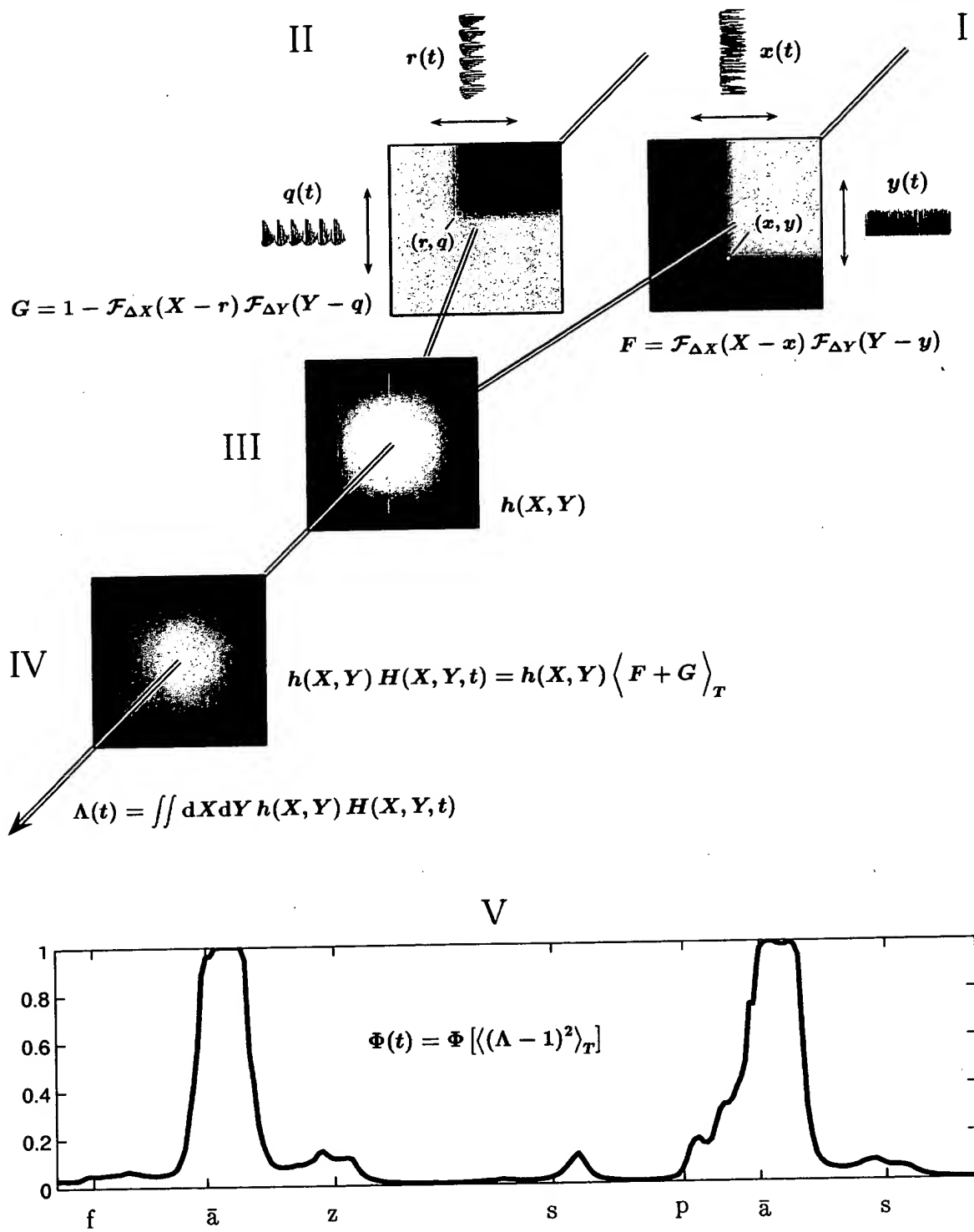


Fig. 35

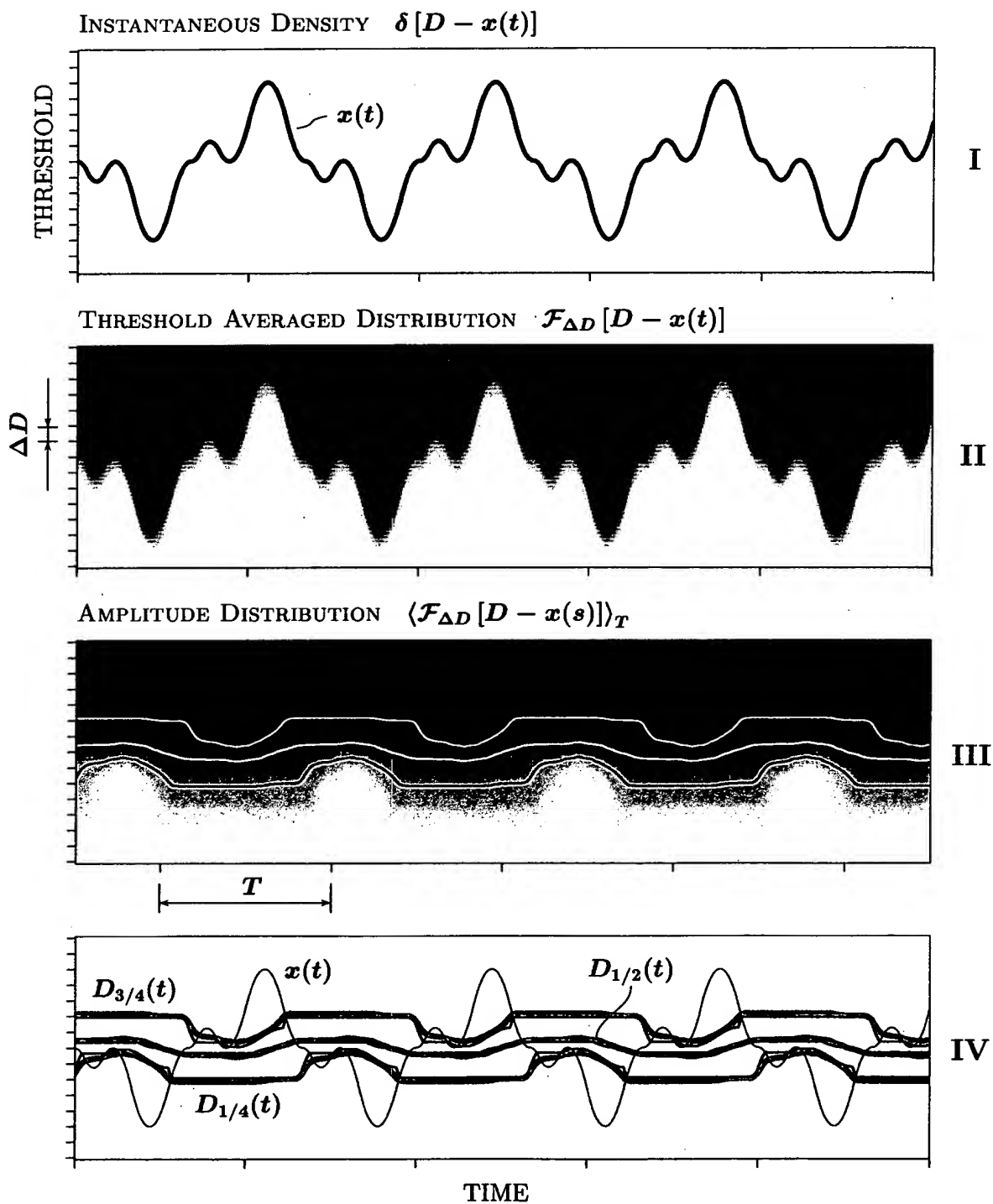
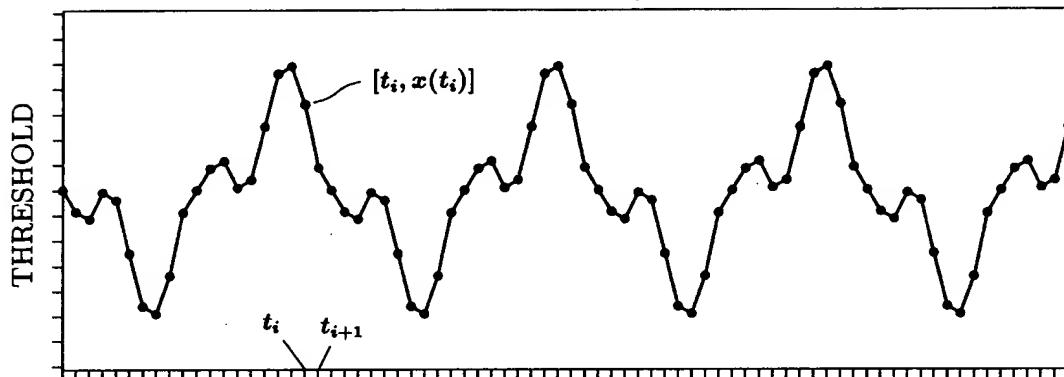


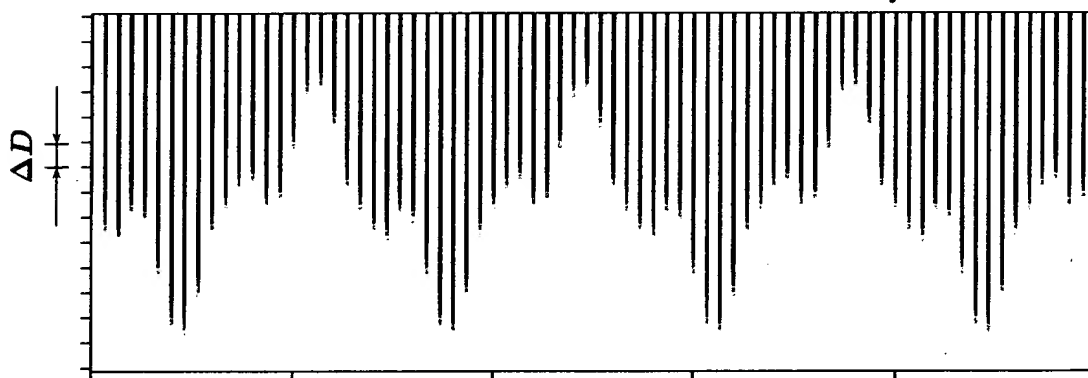
Fig. 36

INSTANTANEOUS DENSITY $\delta[D - x(t)] \sum_i \delta(t - t_i)$



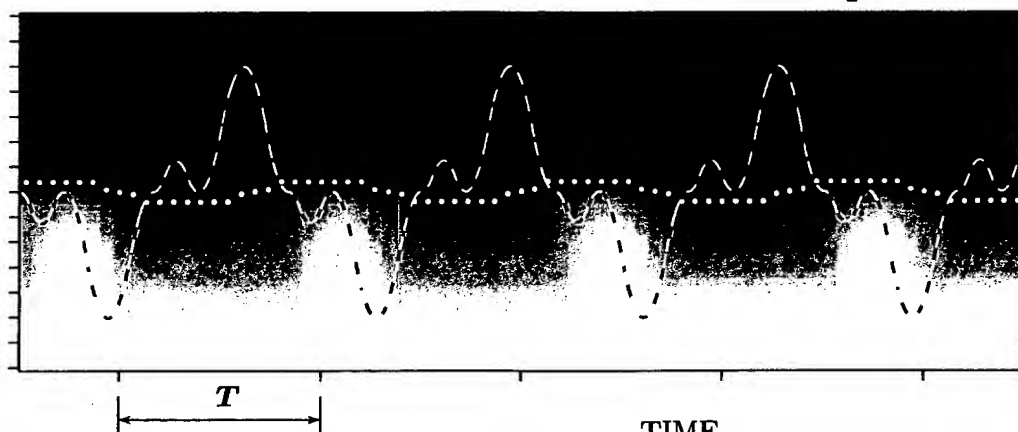
I

THRESHOLD AVERAGED DISTRIBUTION $\mathcal{F}_{\Delta D}[D - x(t)] \sum_i \delta(t - t_i)$



II

AMPLITUDE DISTRIBUTION $\left\langle \mathcal{F}_{\Delta D}[D - x(s)] \sum_i \delta(s - t_i) \right\rangle_T$



III

Fig. 37

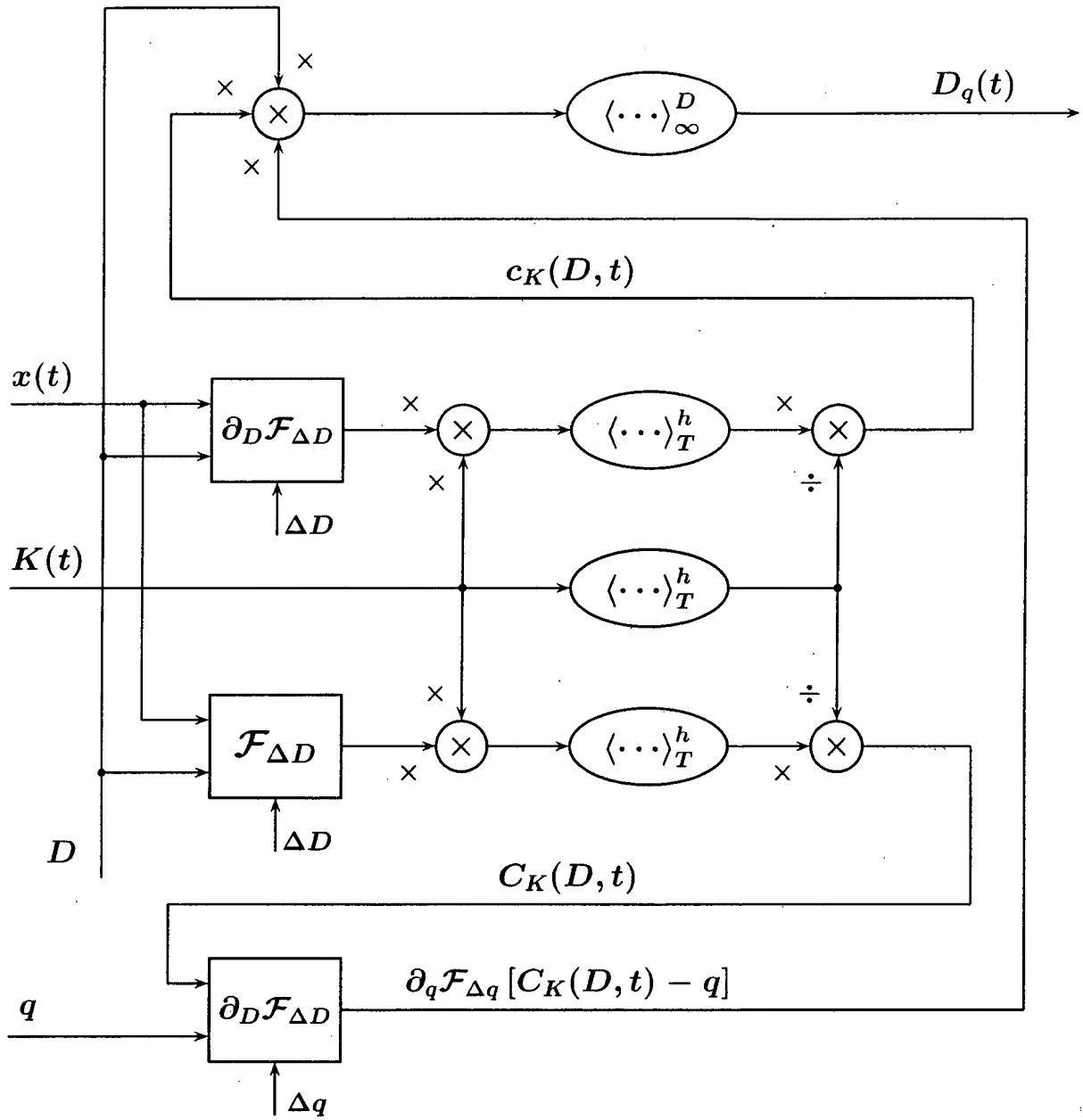


Fig. 38

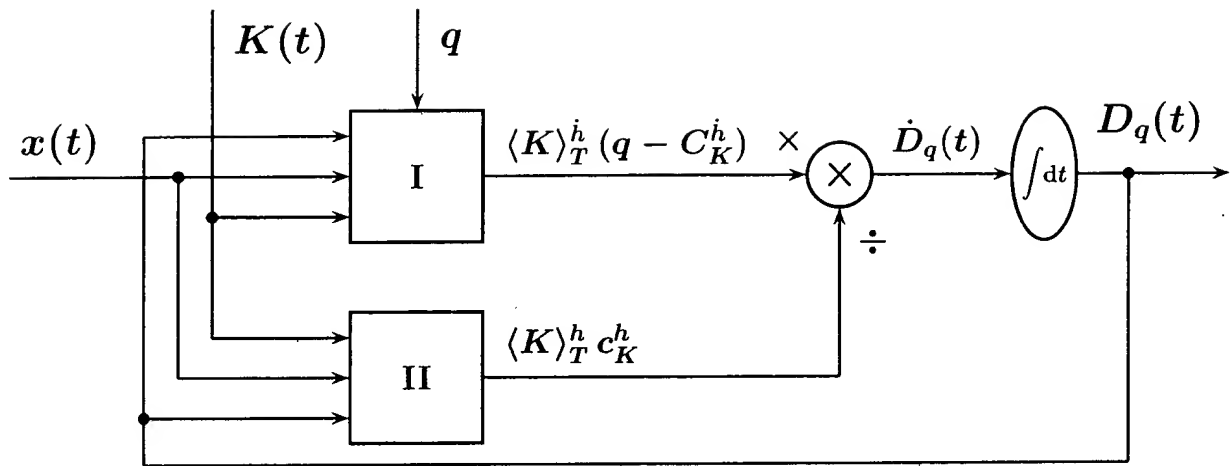


Fig. 39

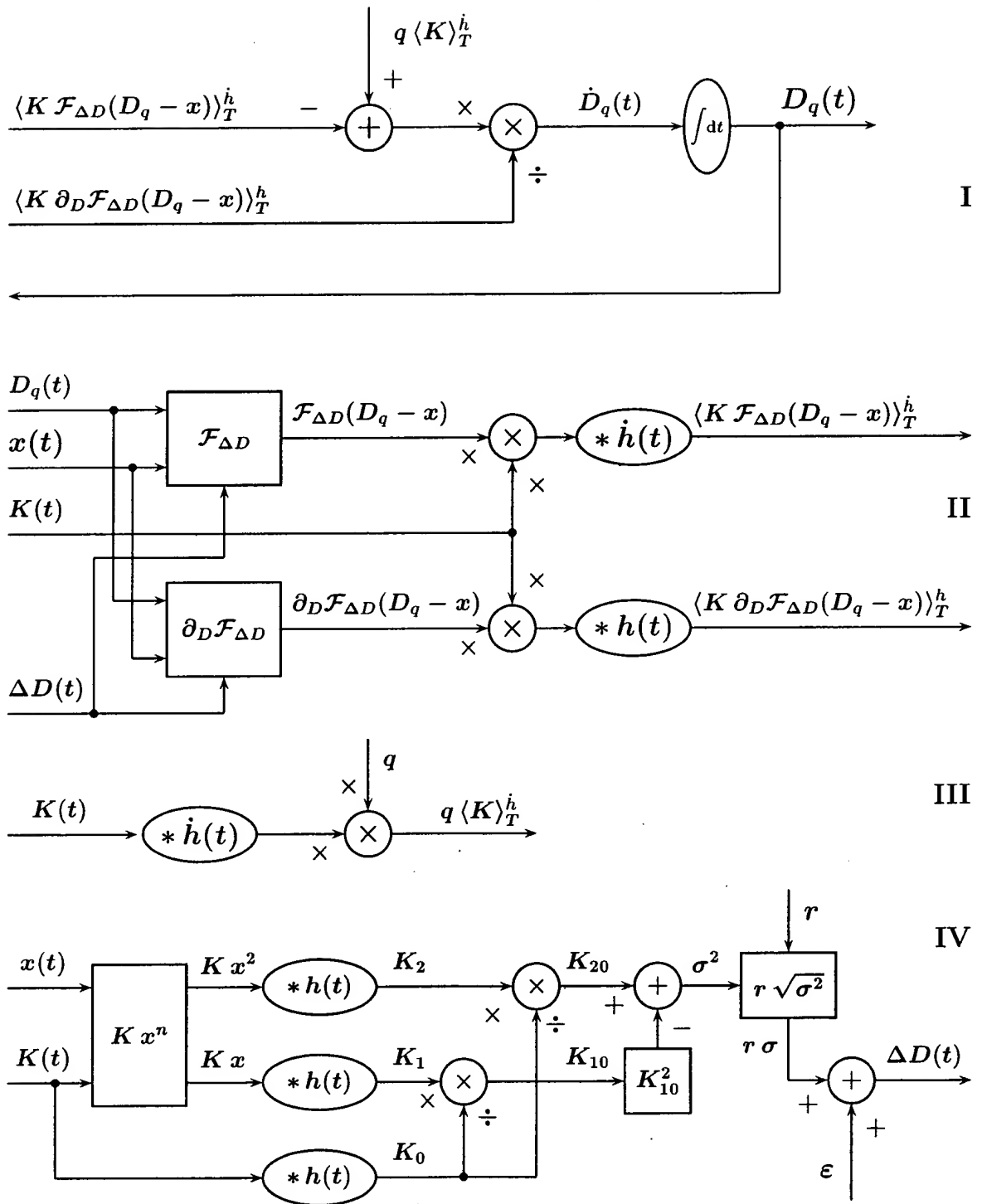
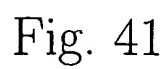


Fig. 40



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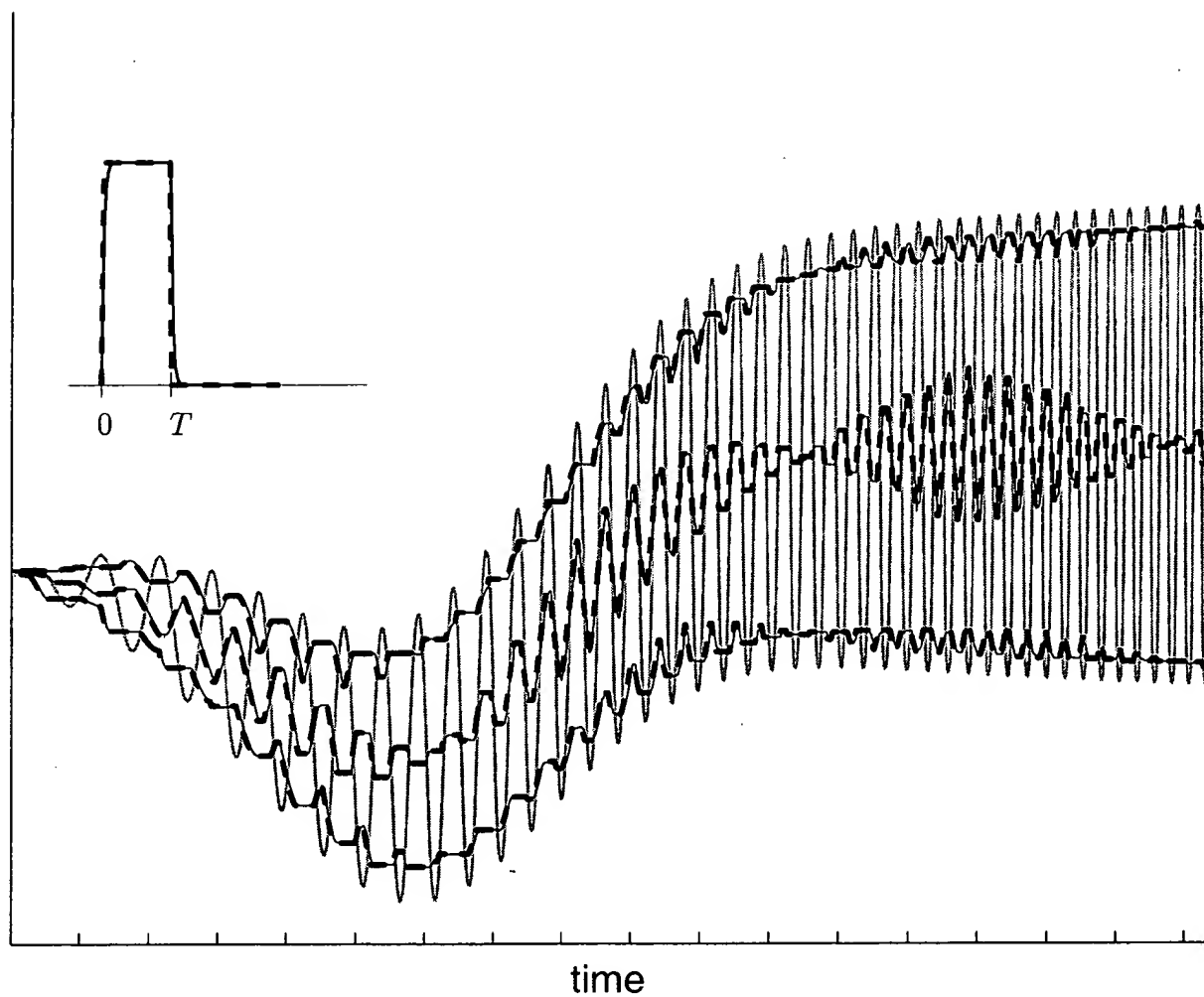


Fig. 42

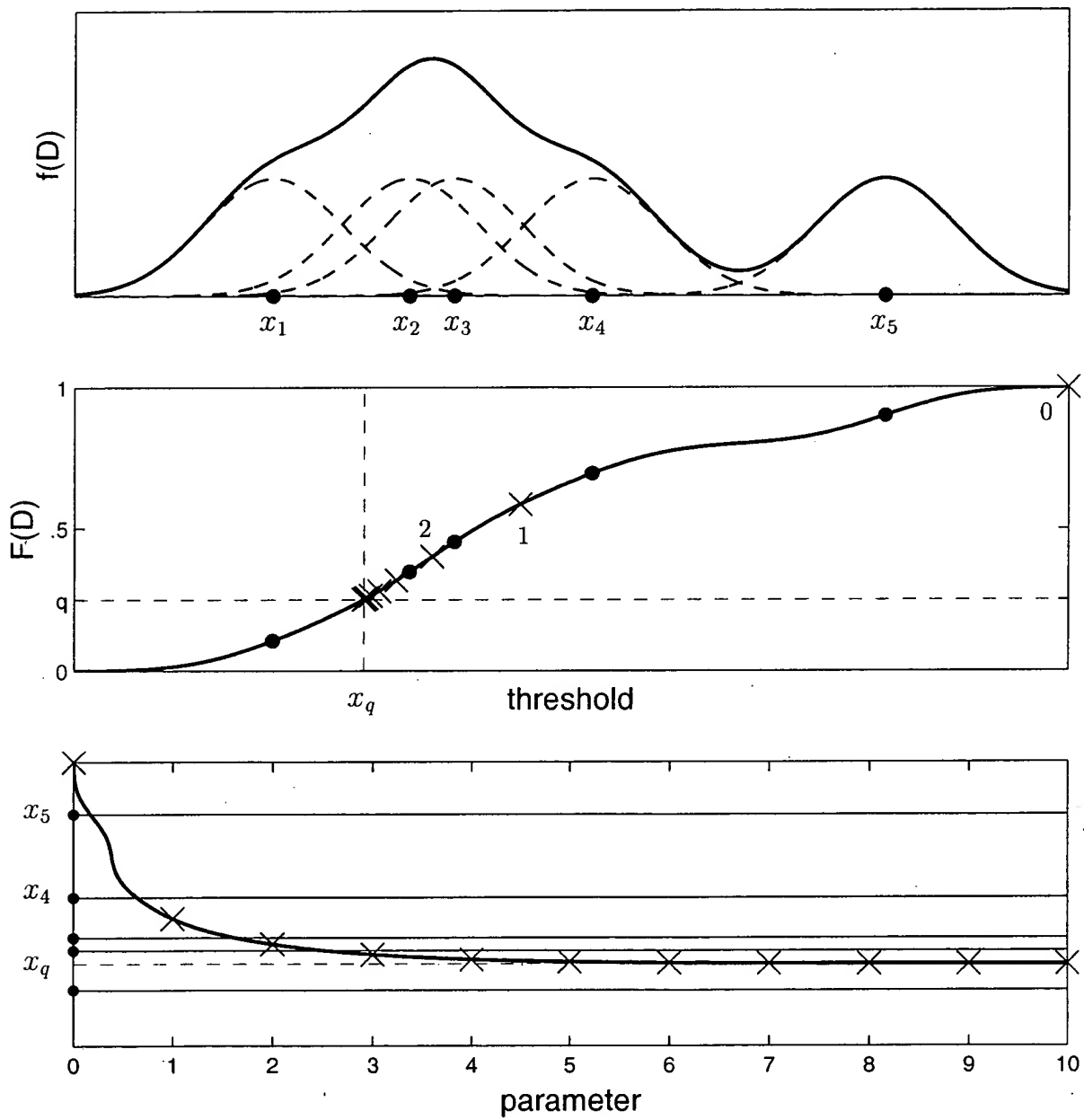
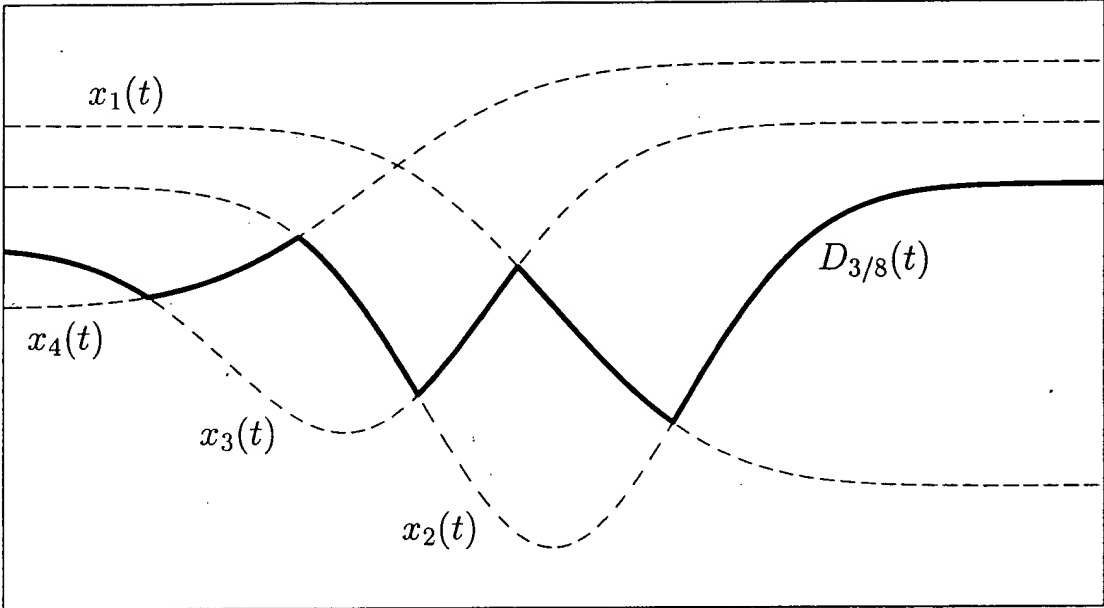


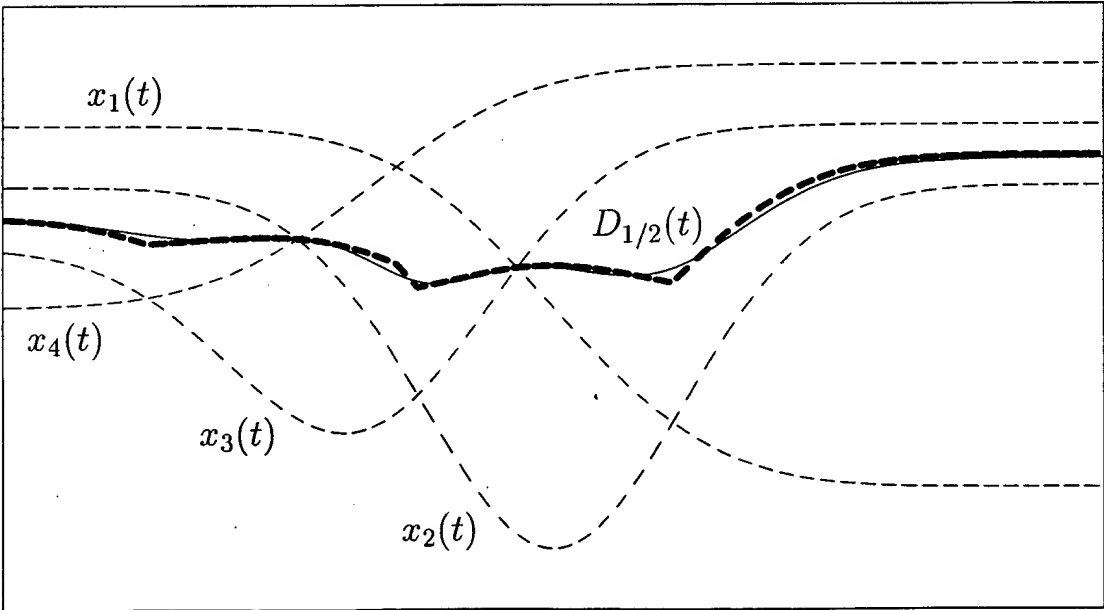
Fig. 43

I



time

II



time

Fig. 44

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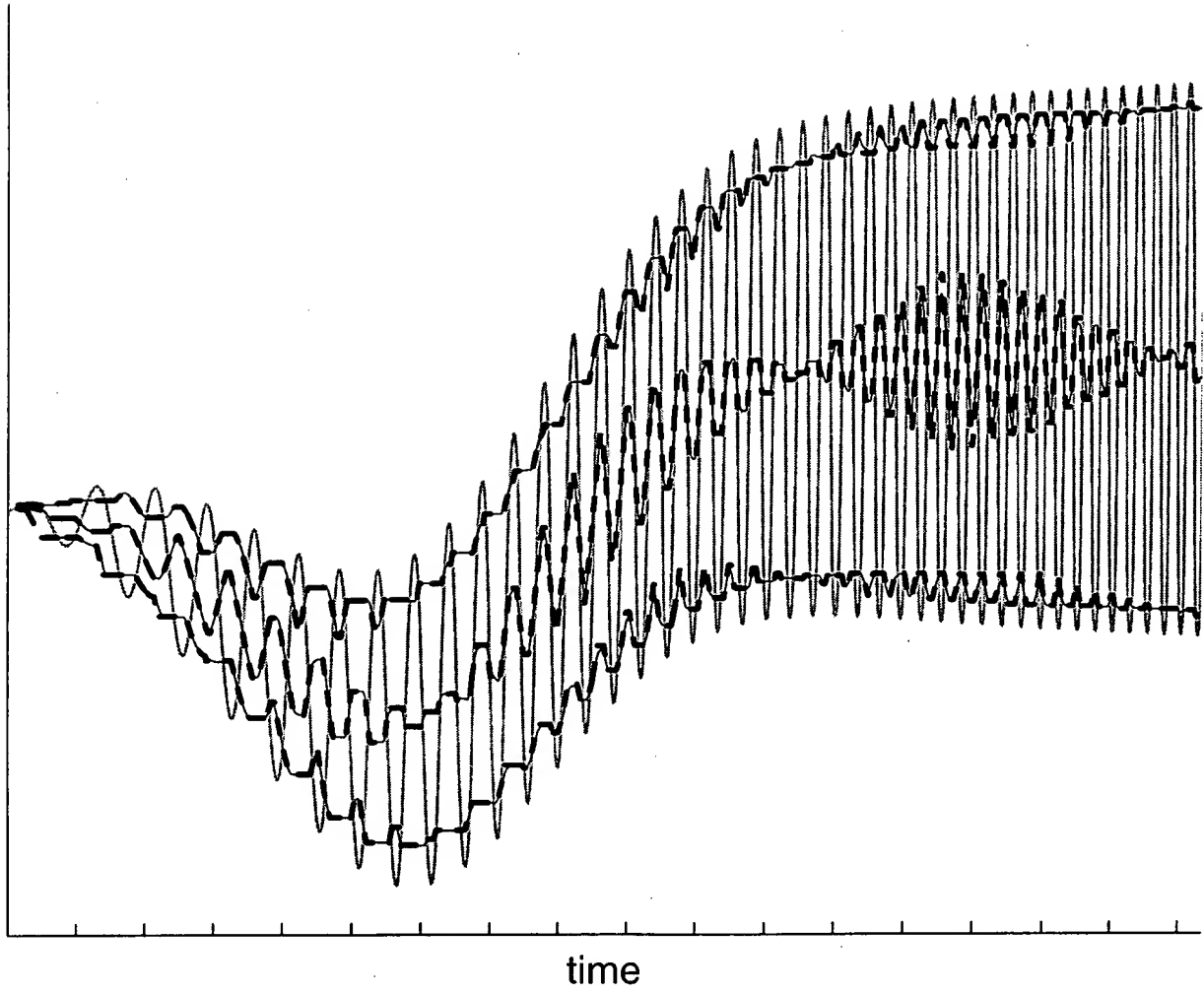


Fig. 45

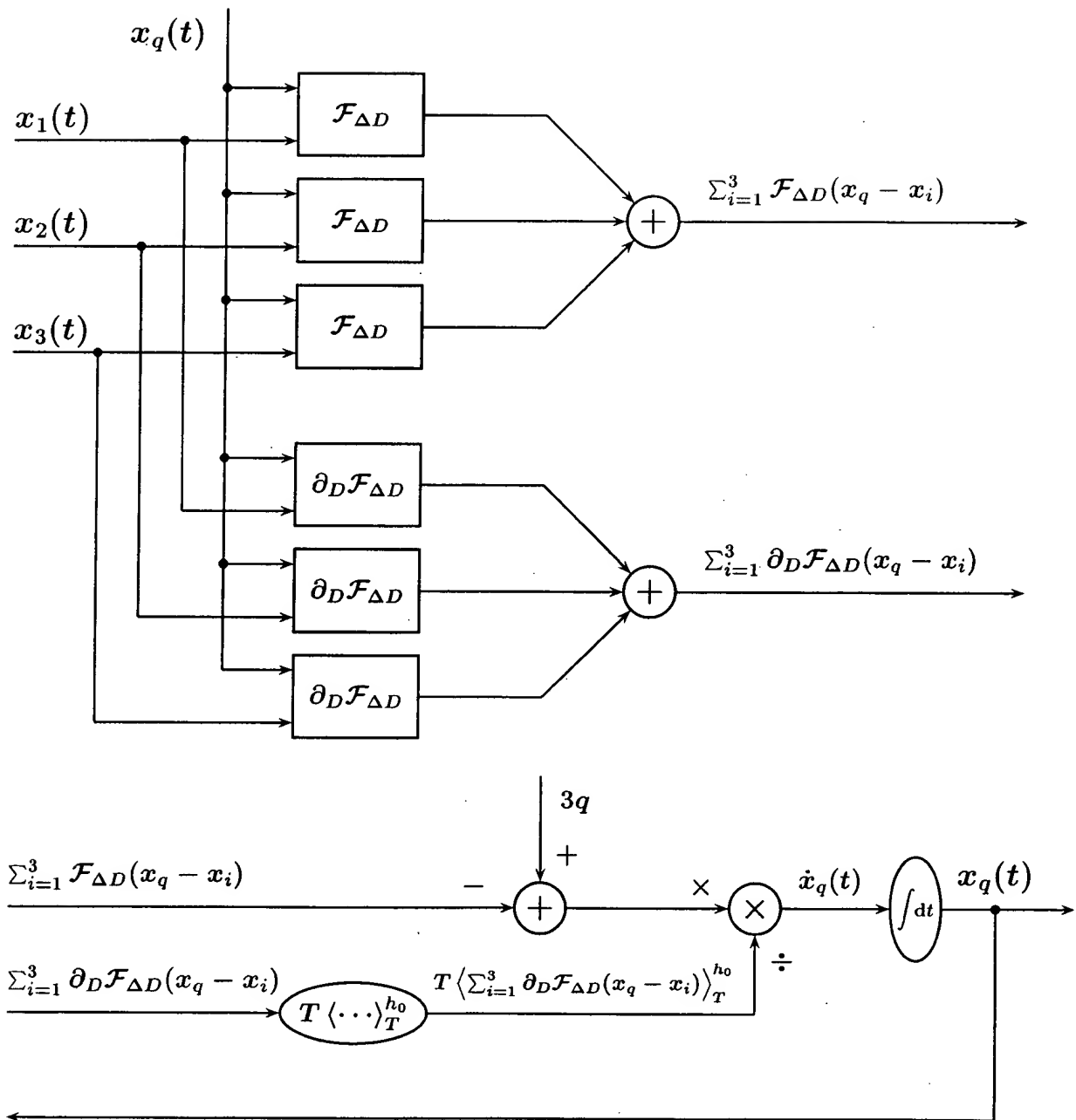


Fig. 46

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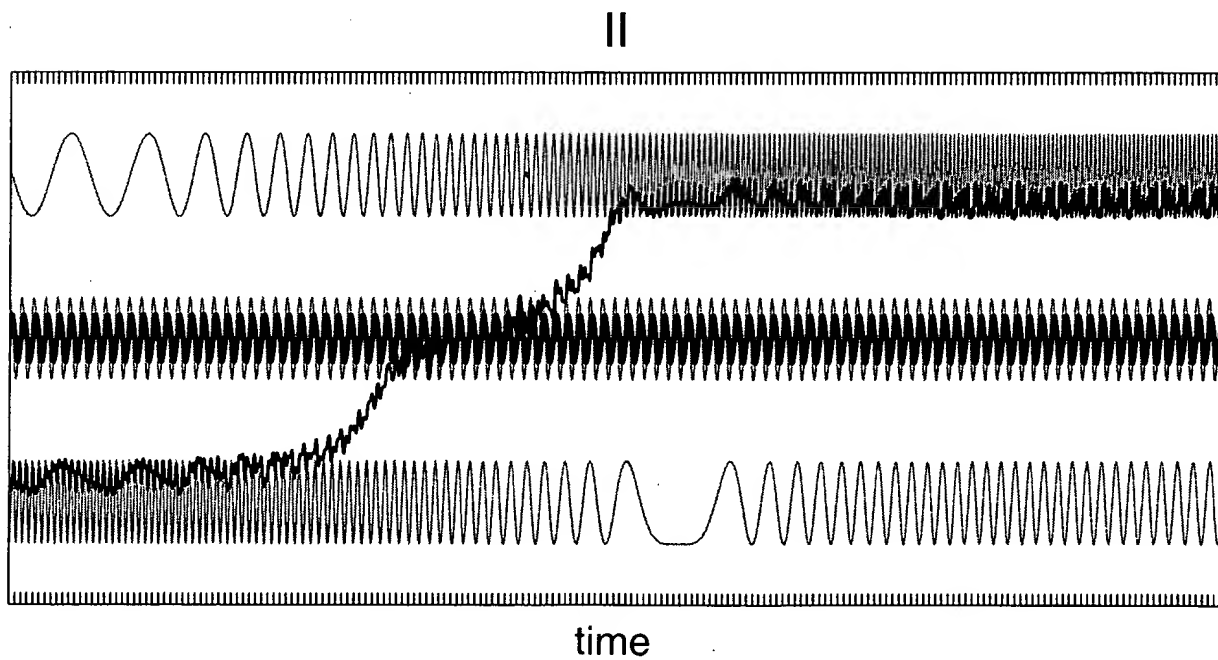
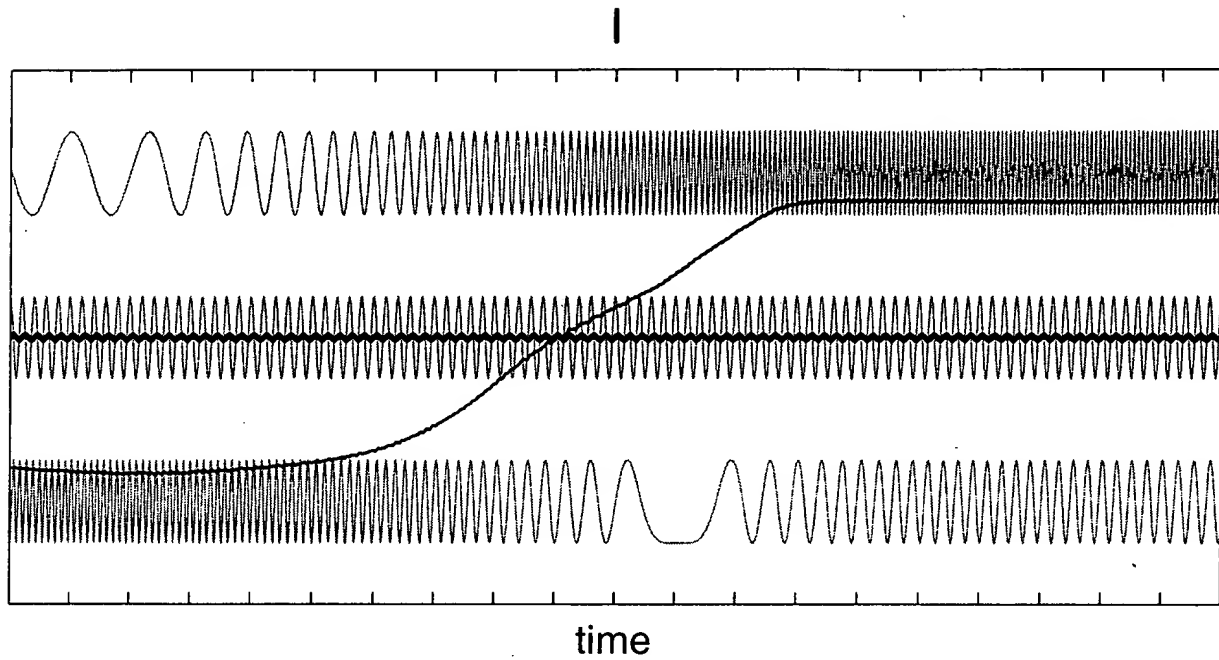
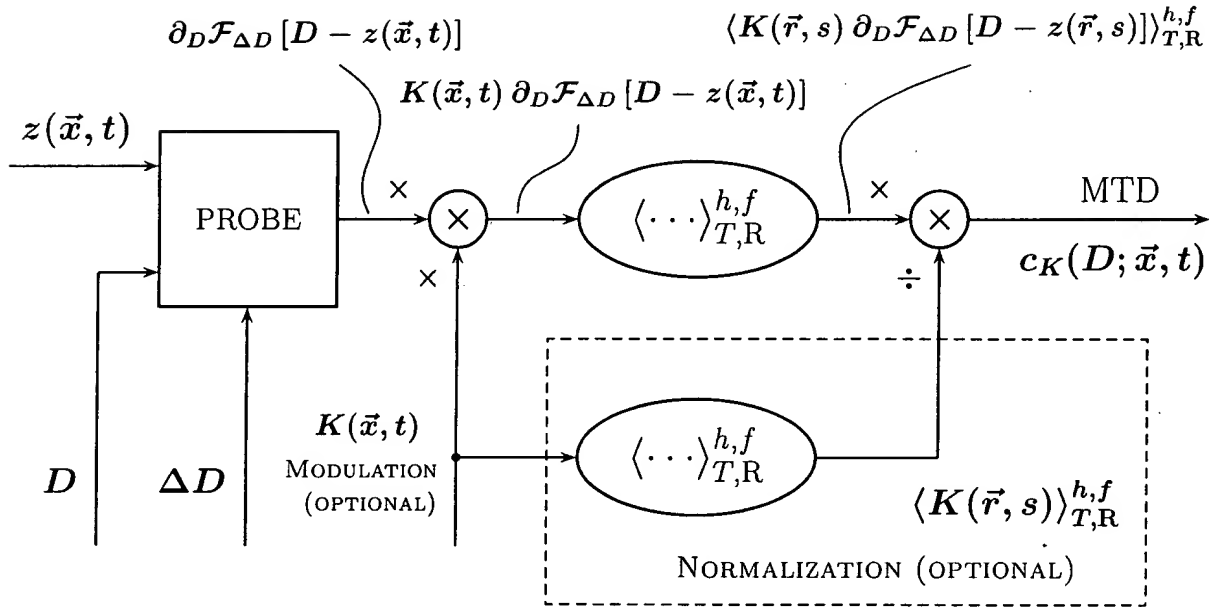


Fig. 47

MTD FOR SCALAR FIELD



ACQUISITION SYSTEM: MEASURING DEVICE (PROBE)

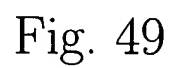
HAS INPUT-OUTPUT CHARACTERISTIC OF DIFFERENTIAL DISCRIMINATOR.

$z(\vec{x}, t)$ IS INPUT SCALAR VARIABLE (FIELD). E.G., MONOCHROME 2D-SURFACE (IMAGE) CAN BE VIEWED EITHER AS CONTINUOUS 2D SCALAR FIELD, OR AS DISCRETE ENSEMBLE OF VARIABLES.

D AND ΔD ARE PARAMETERS OF PROBE. D IS DISPLACEMENT, OR THRESHOLD. IT IS ANOTHER VARIABLE (NORMALLY OF SAME NATURE AS INPUT VARIABLE), SERVING AS UNIT, OR DATUM. ΔD IS WIDTH, OR RESOLUTION, PARAMETER OF PROBE.

$K(\vec{x}, t)$ IS MODULATING VARIABLE, GENERALLY OF DIFFERENT NATURE THAN INPUT VARIABLE. E.G., $K(\vec{x}, t) = \text{constant}$ LEADS TO MTD AS AMPLITUDE DENSITY, AND $K(\vec{x}, t) = |\dot{z}(\vec{x}, t)|$ LEADS TO MTD AS COUNTING DENSITY/RATE.

Fig. 48



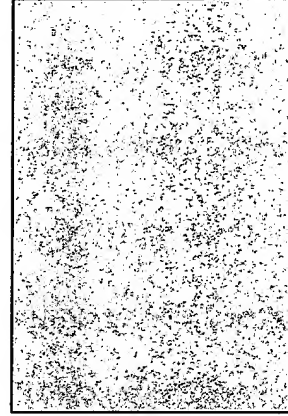
1



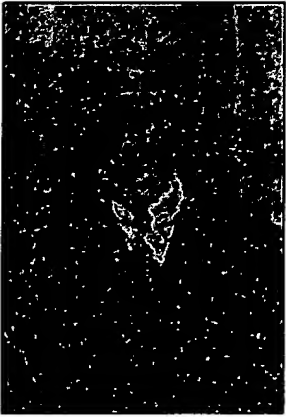
2



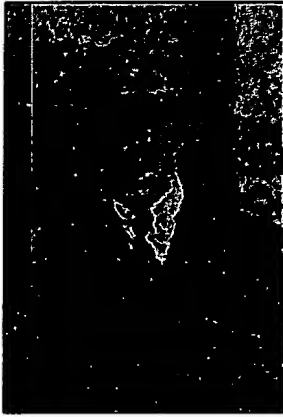
3a ($n = 0$)



3b ($n = N$)



3c ($n = 2N$)



3d ($n = 3N$)



3e ($n = 4N$)



3f ($n = 6N$)



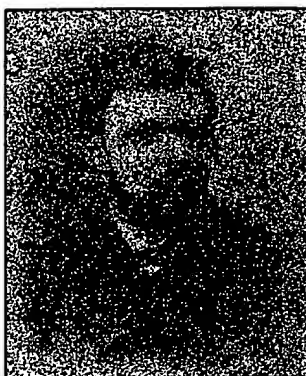
3g ($n = 10N$)



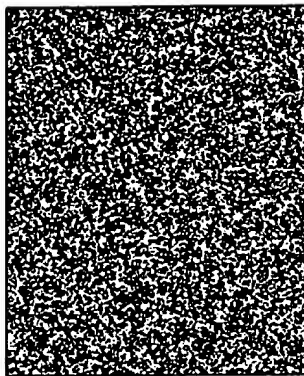
Fig. 50

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1a



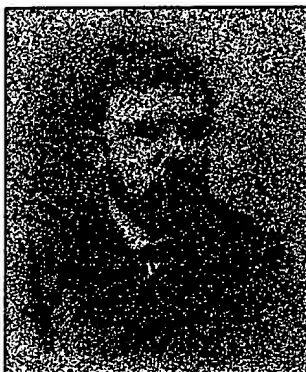
2a



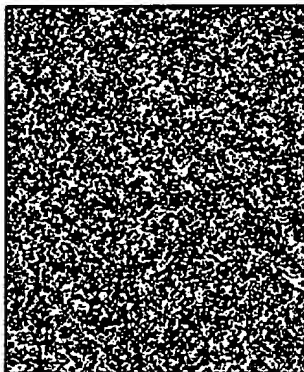
3a



1b



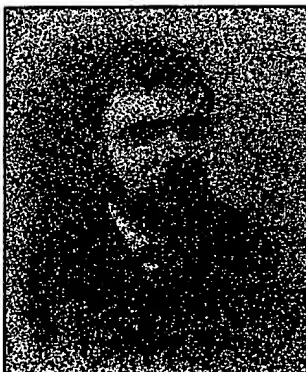
2b



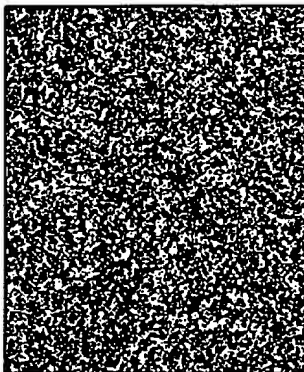
3b



1c



2c



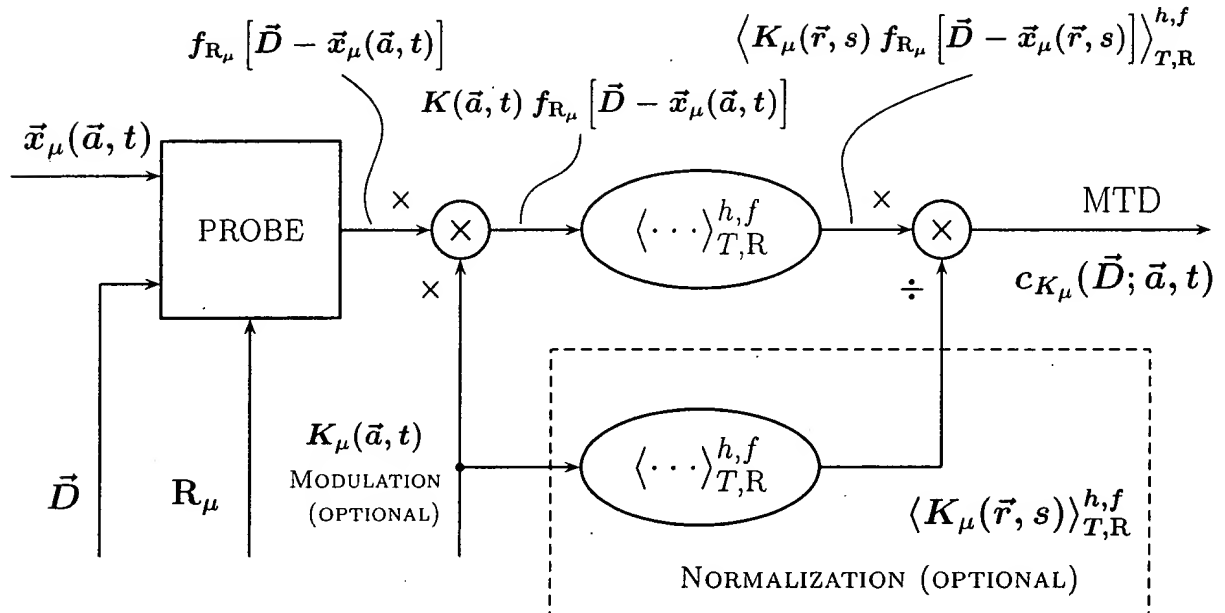
3c



Fig. 51

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MTD FOR COMPONENT OF ENSEMBLE OF VECTOR FIELDS



ACQUISITION SYSTEM: MEASURING DEVICE (PROBE)

HAS INPUT-OUTPUT CHARACTERISTIC OF DIFFERENTIAL DISCRIMINATOR.

$\vec{x}_\mu(\vec{a}, t)$ IS INPUT VECTOR VARIABLE (FIELD). E.G., TRUECOLOR IMAGE CAN BE VIEWED AS CONTINUOUS 3D VECTOR FIELD (WITH 2D POSITION VECTOR \vec{a}).

\vec{D} AND R_μ ARE PARAMETERS OF PROBE. \vec{D} IS DISPLACEMENT, OR THRESHOLD. IT IS ANOTHER VARIABLE (NORMALLY OF SAME NATURE AS INPUT VARIABLE), SERVING AS UNIT, OR DATUM. R_μ IS WIDTH, OR RESOLUTION, PARAMETER.

$K_\mu(\vec{a}, t)$ IS MODULATING VARIABLE, GENERALLY OF DIFFERENT NATURE THAN INPUT VARIABLE. E.G., $K(\vec{a}, t) = \text{constant}$ LEADS TO MTD AS AMPLITUDE DENSITY, AND $K_\mu(\vec{a}, t) = |\vec{x}_\mu(\vec{a}, t)|$ LEADS TO MTD AS COUNTING DENSITY/RATE.

Fig. 52

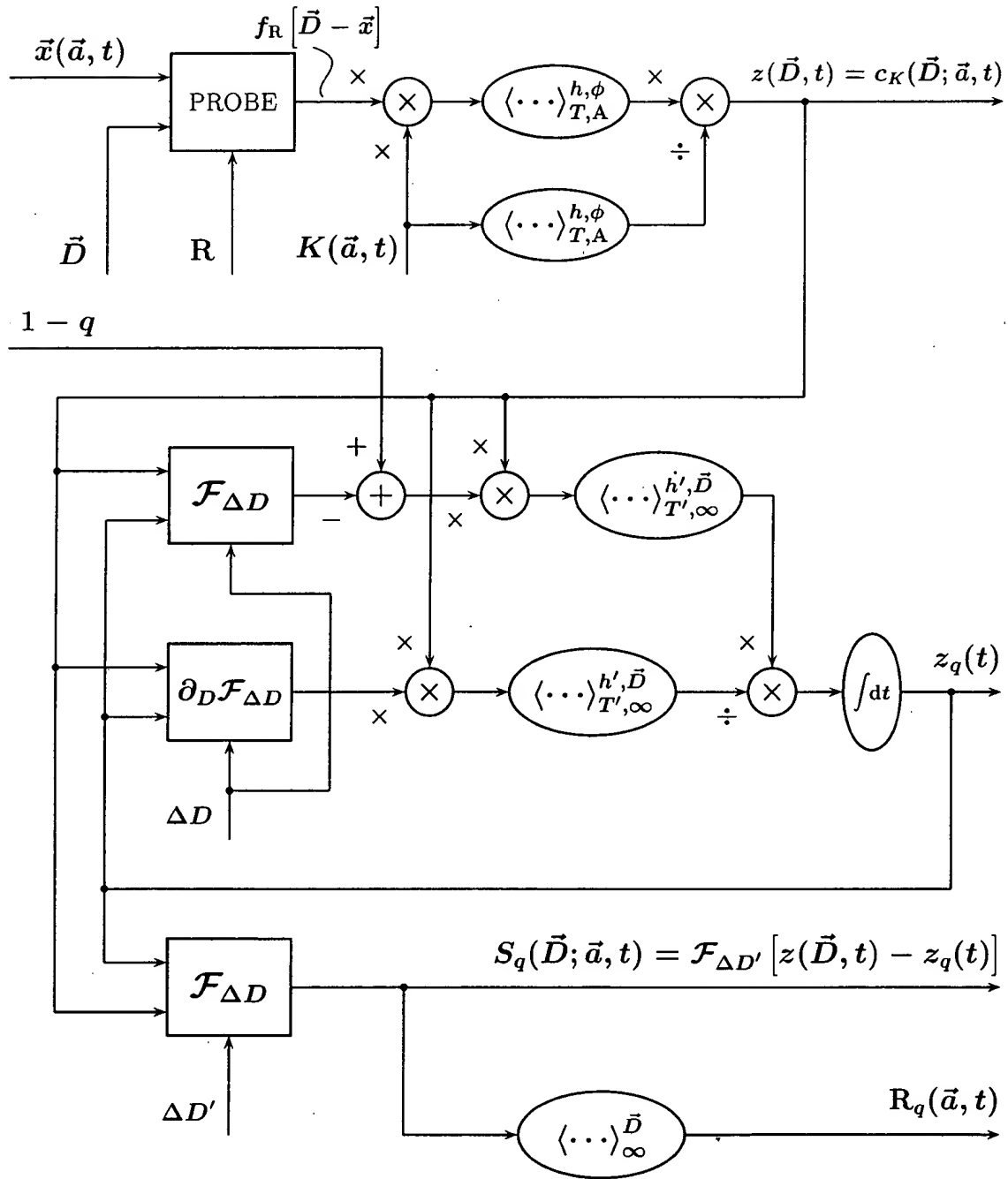


Fig. 53

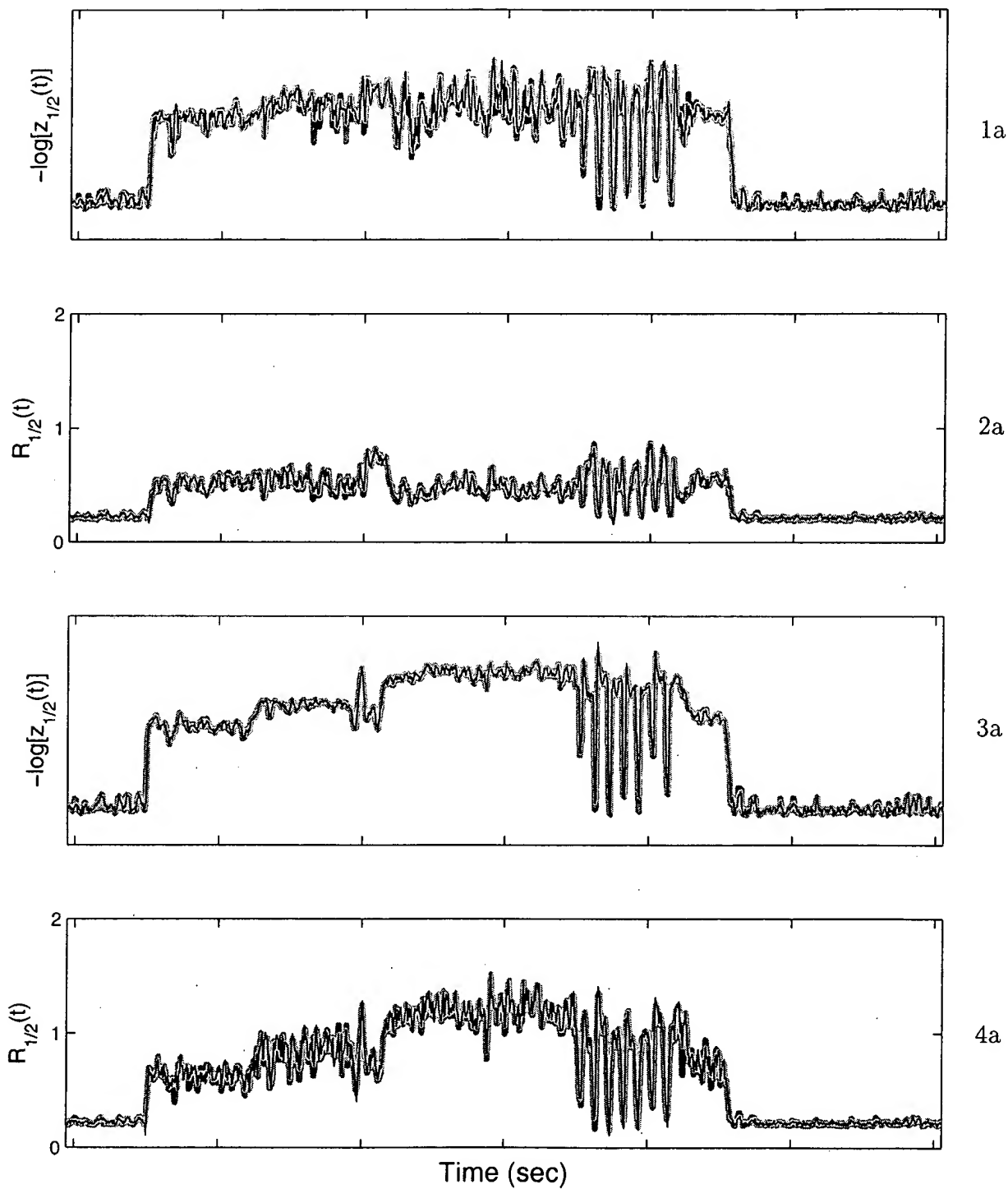


Fig. 54 a

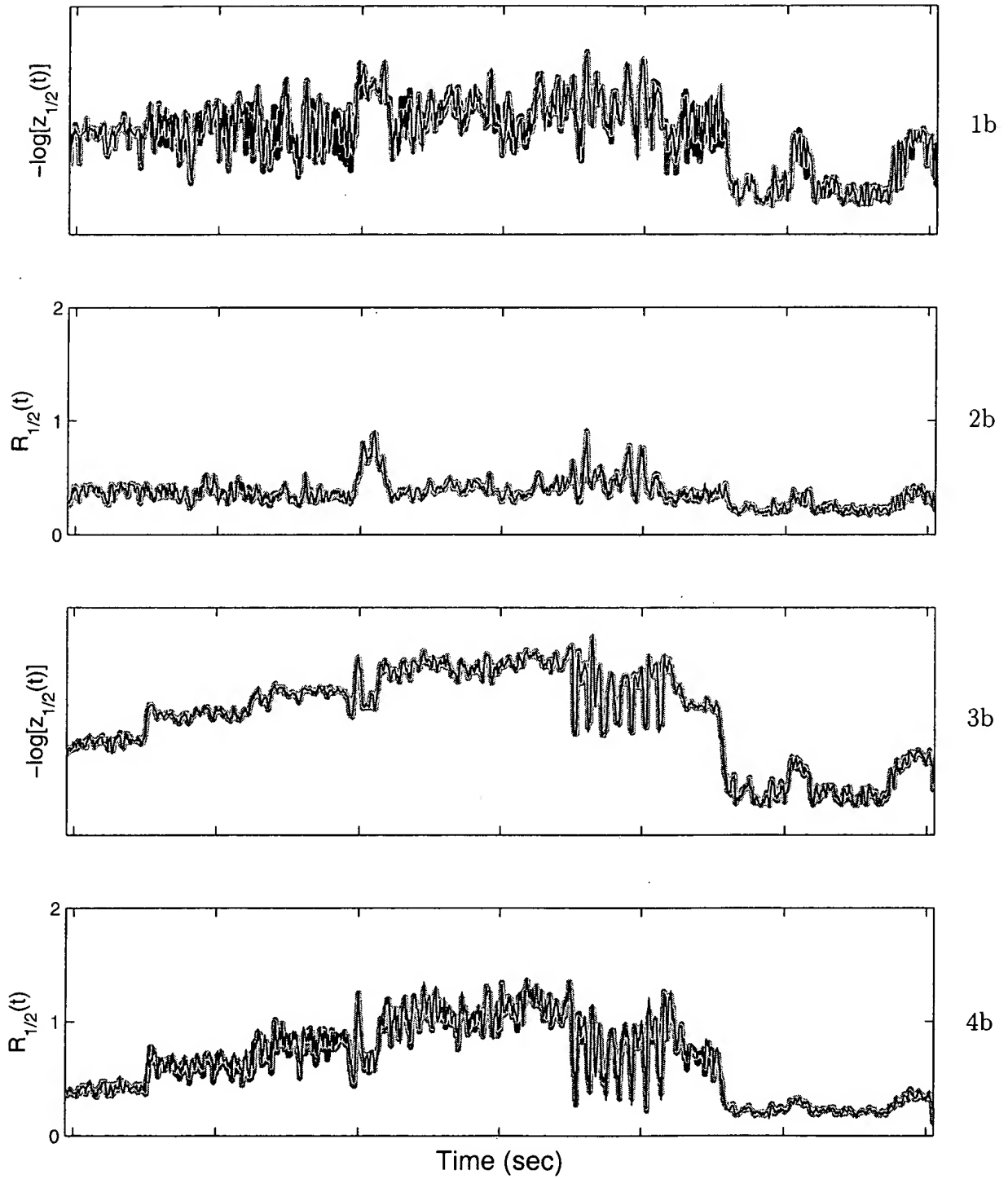


Fig. 54 b

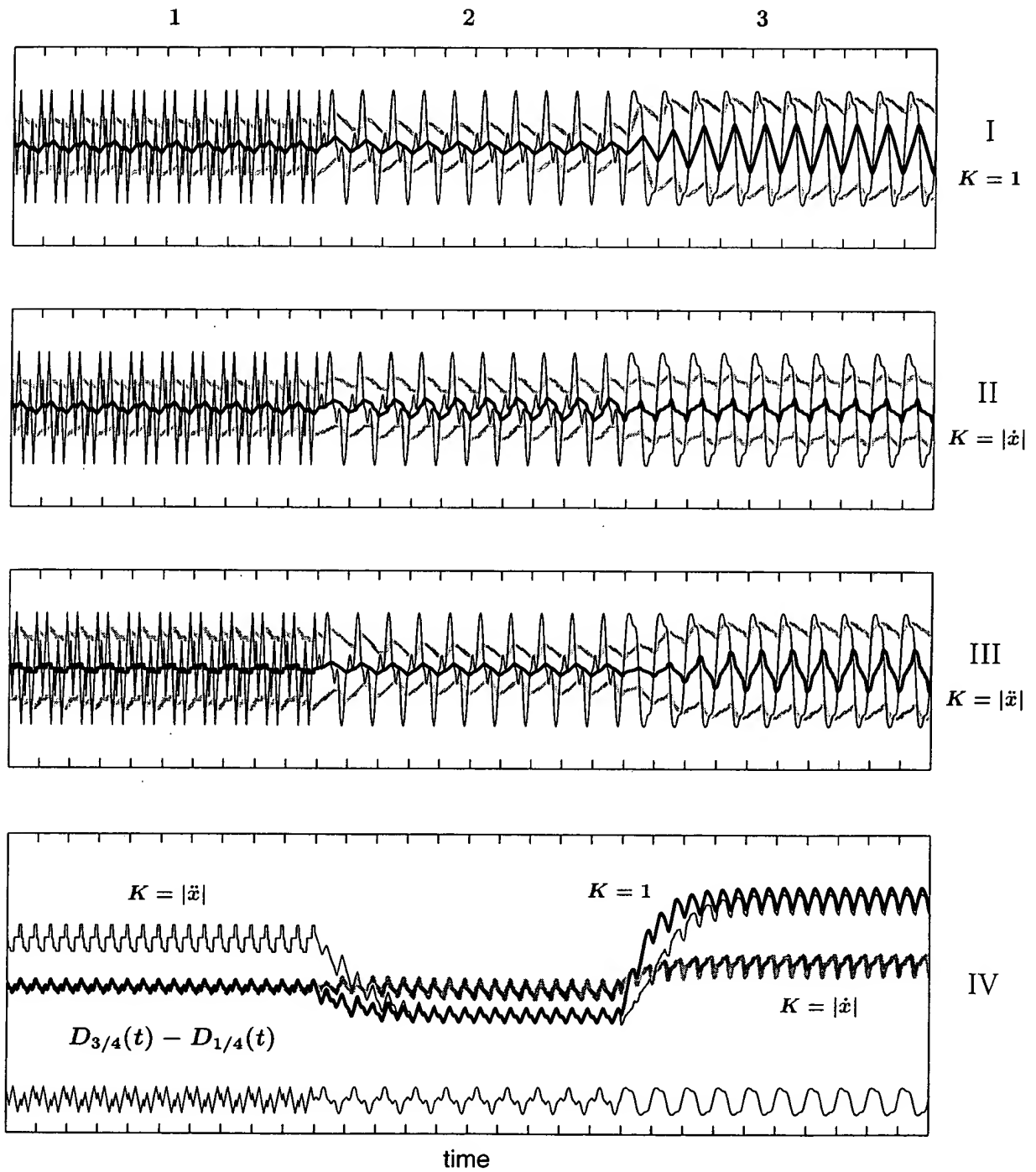


Fig. 55

0954.0801 125F2560

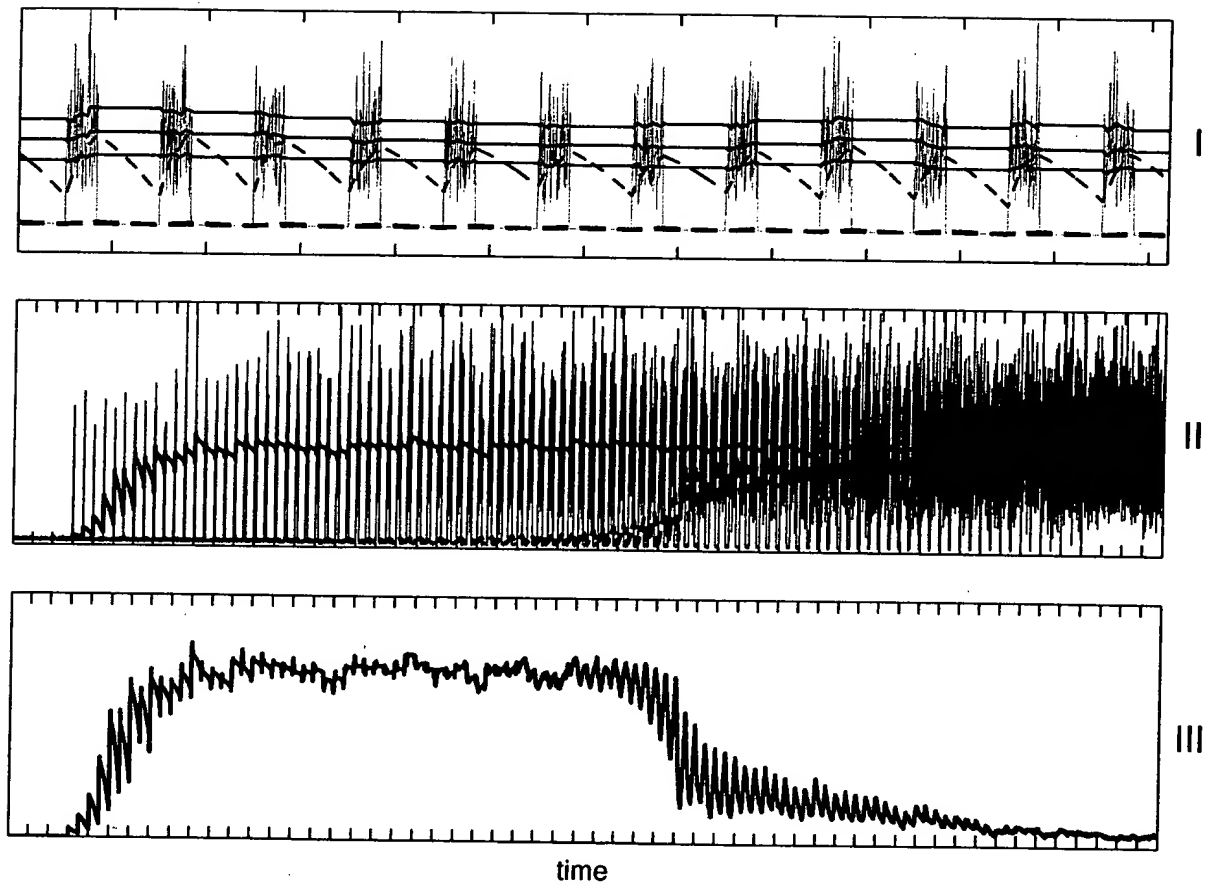


Fig. 56

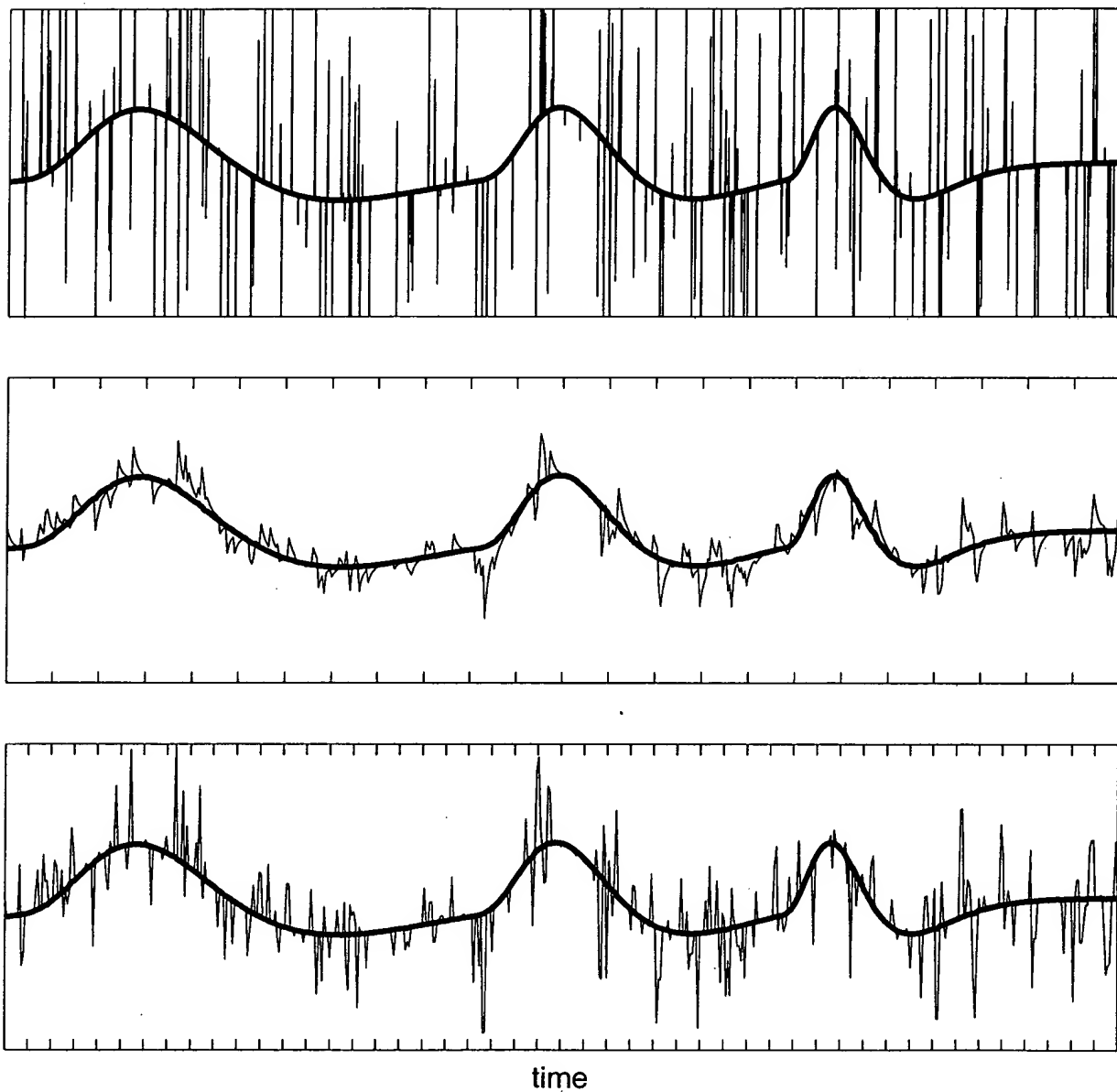


Fig. 57

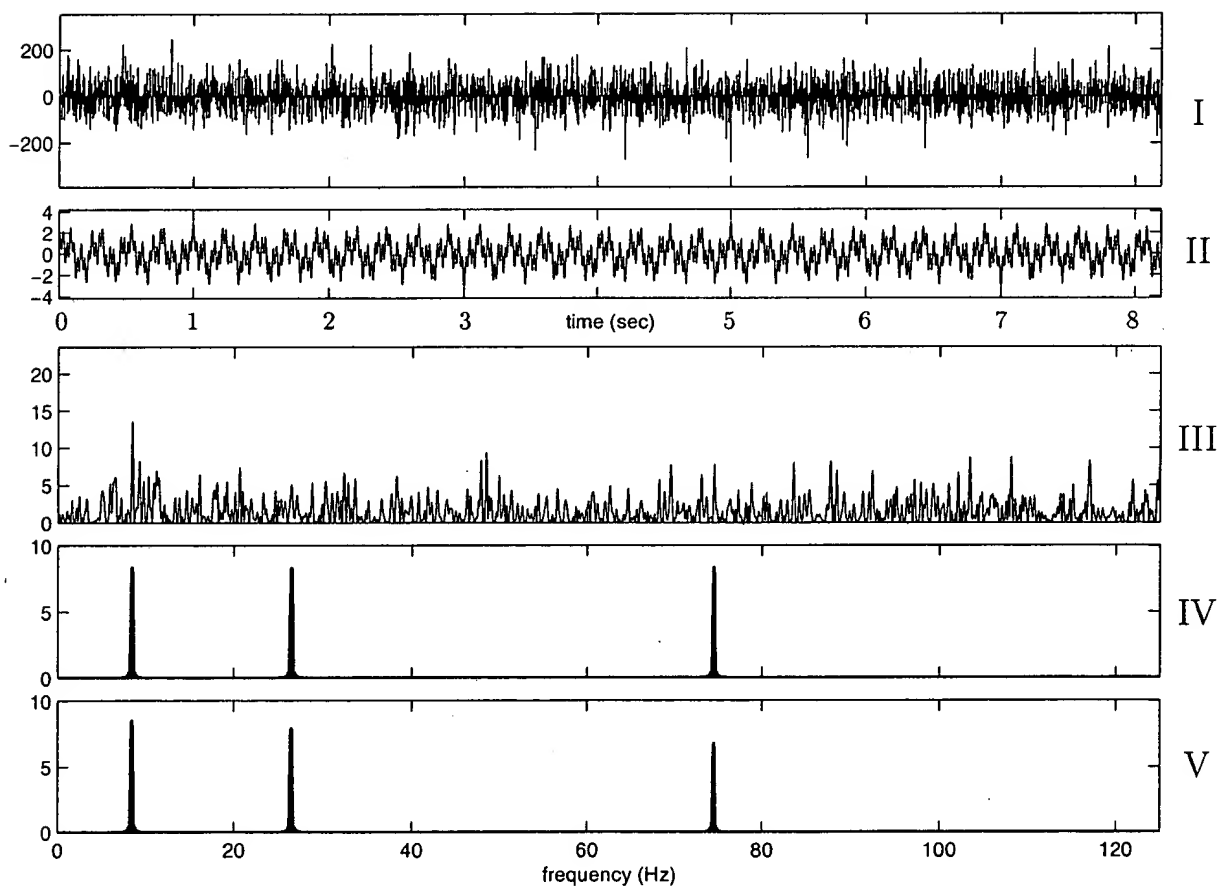
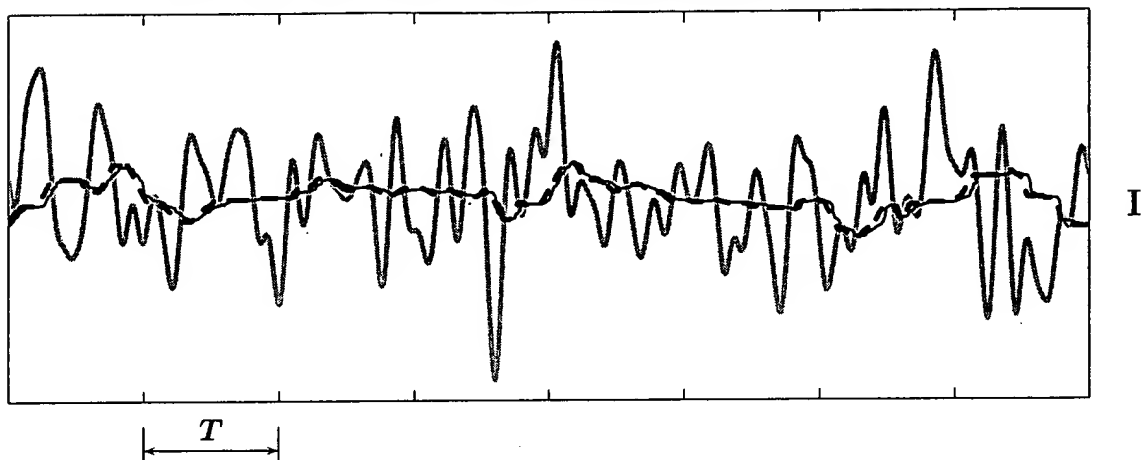
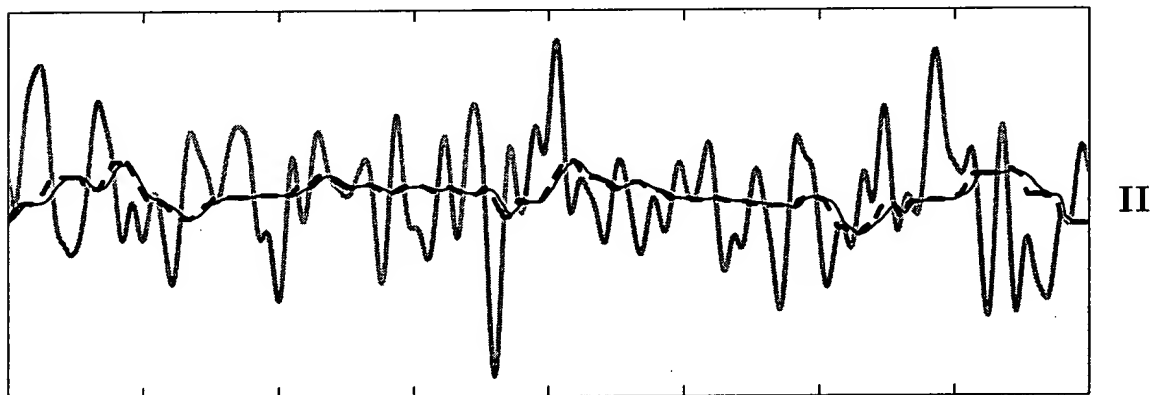


Fig. 58

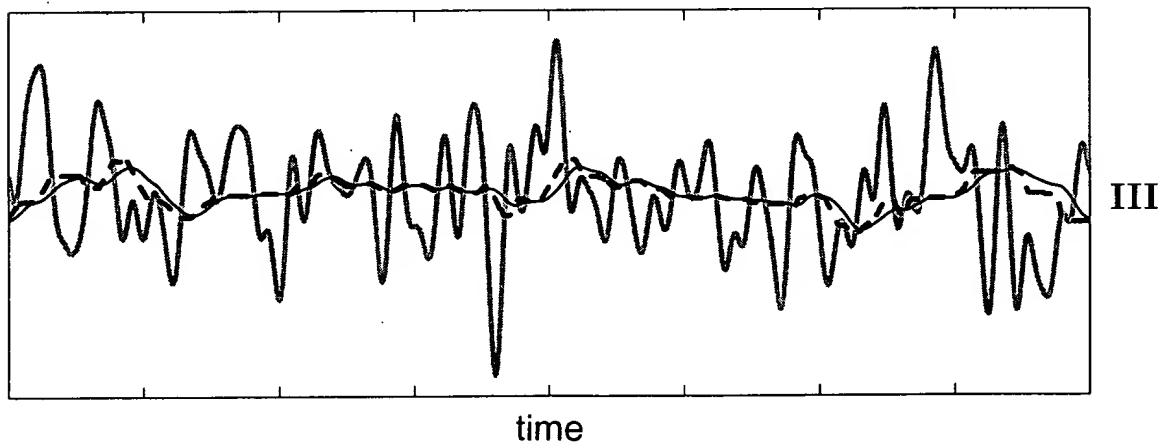
OUTPUTS OF DIGITAL MEDIAN FILTER AND SQUARE WINDOW MEDIAN AARF



OUTPUTS OF DIGITAL MEDIAN FILTER AND SQUARE WINDOW MEDIAN ARS



OUTPUTS OF DIGITAL MEDIAN FILTER AND ANALOG MEDIAN FILTER BASED ON IDEAL MEASURING SYSTEM

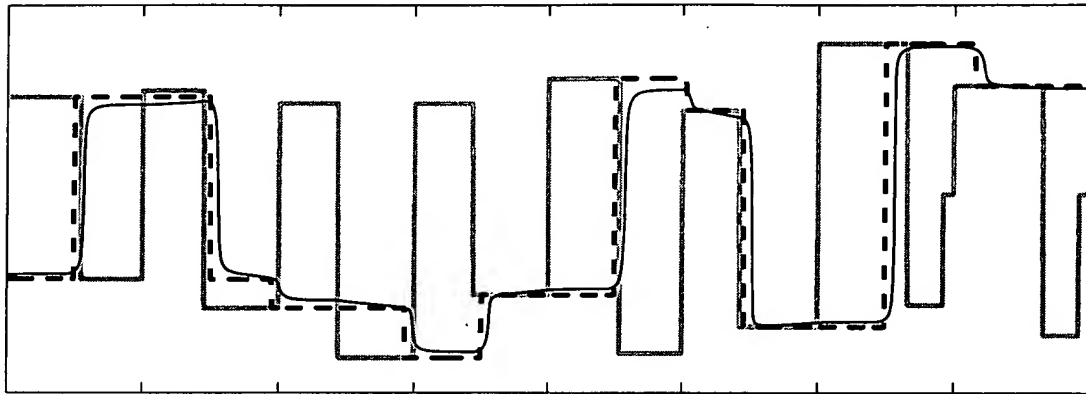


time

Fig. 59 a

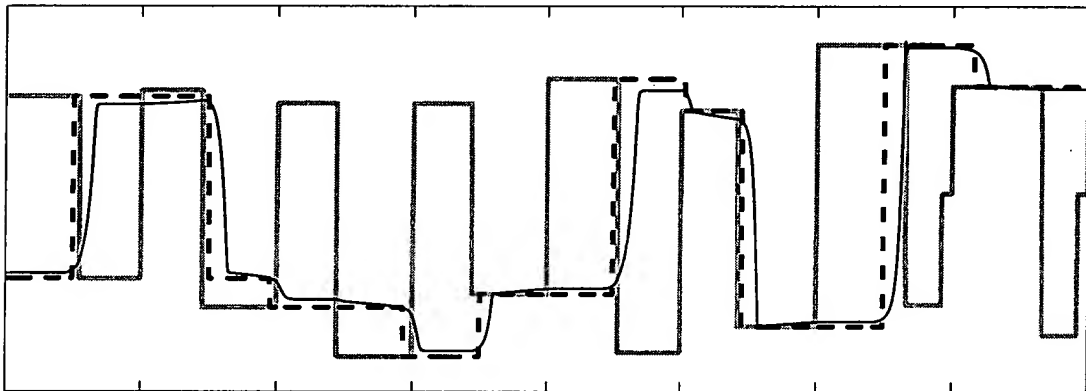
09921524.080301

OUTPUTS OF DIGITAL MEDIAN FILTER AND SQUARE WINDOW MEDIAN AARF



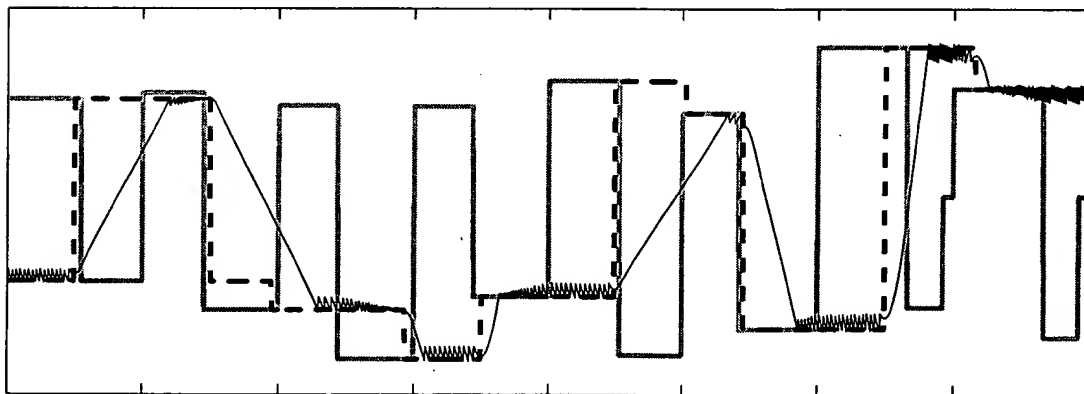
I

OUTPUTS OF DIGITAL MEDIAN FILTER AND SQUARE WINDOW MEDIAN ARS



II

OUTPUTS OF DIGITAL MEDIAN FILTER AND ANALOG MEDIAN FILTER BASED ON IDEAL MEASURING SYSTEM



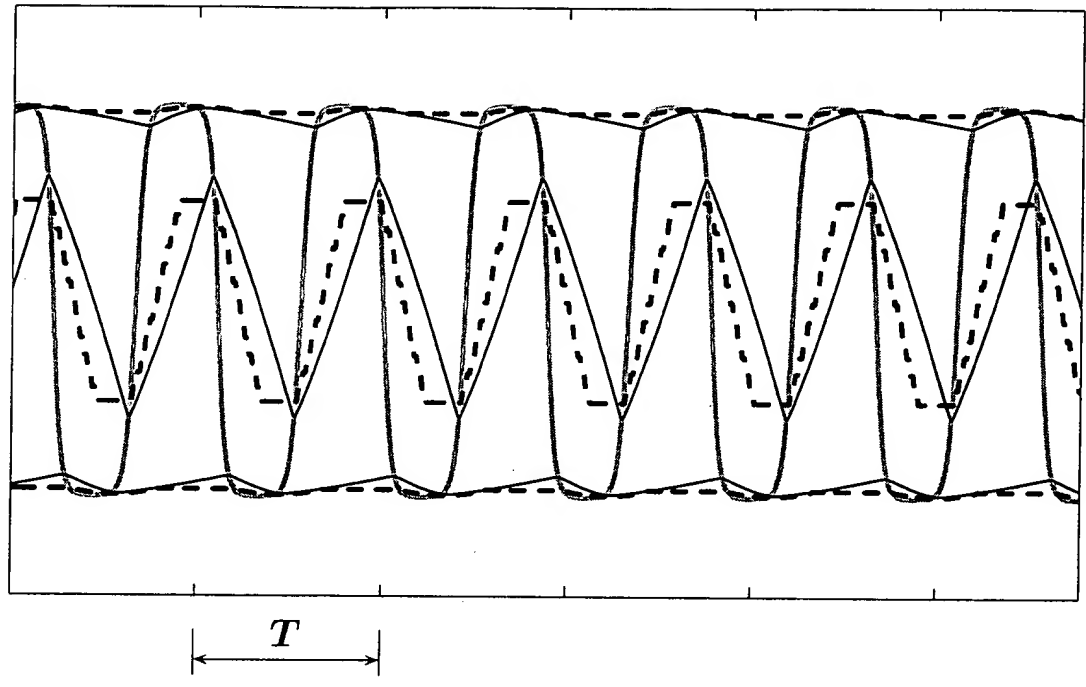
III

time

Fig. 59 b

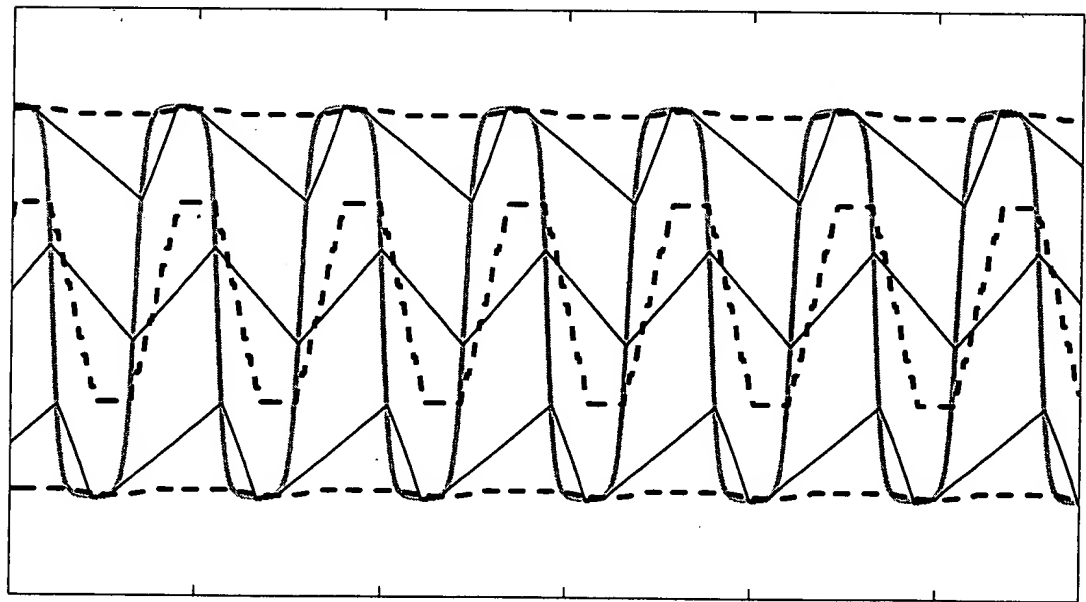
092524.030
 425T2660

QUARTILE OUTPUTS OF DIGITAL RANK ORDER FILTER AND RC_{10} AARF



I

QUARTILE OUTPUTS OF DIGITAL RANK ORDER FILTER
 AND RC_{10} ARF BASED ON IDEAL MEASURING SYSTEM



II

time

Fig. 60

099154-080301
 TEST 2660

TRANSFORMING INPUT VARIABLE INTO MRT VARIABLE

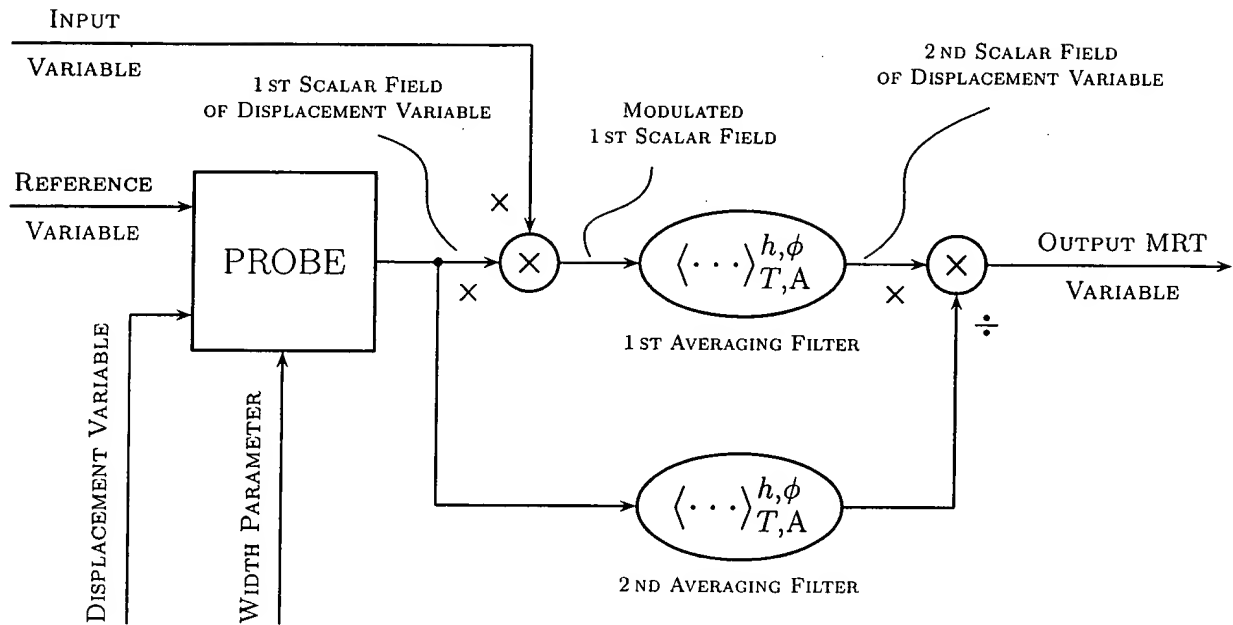


Fig. 61

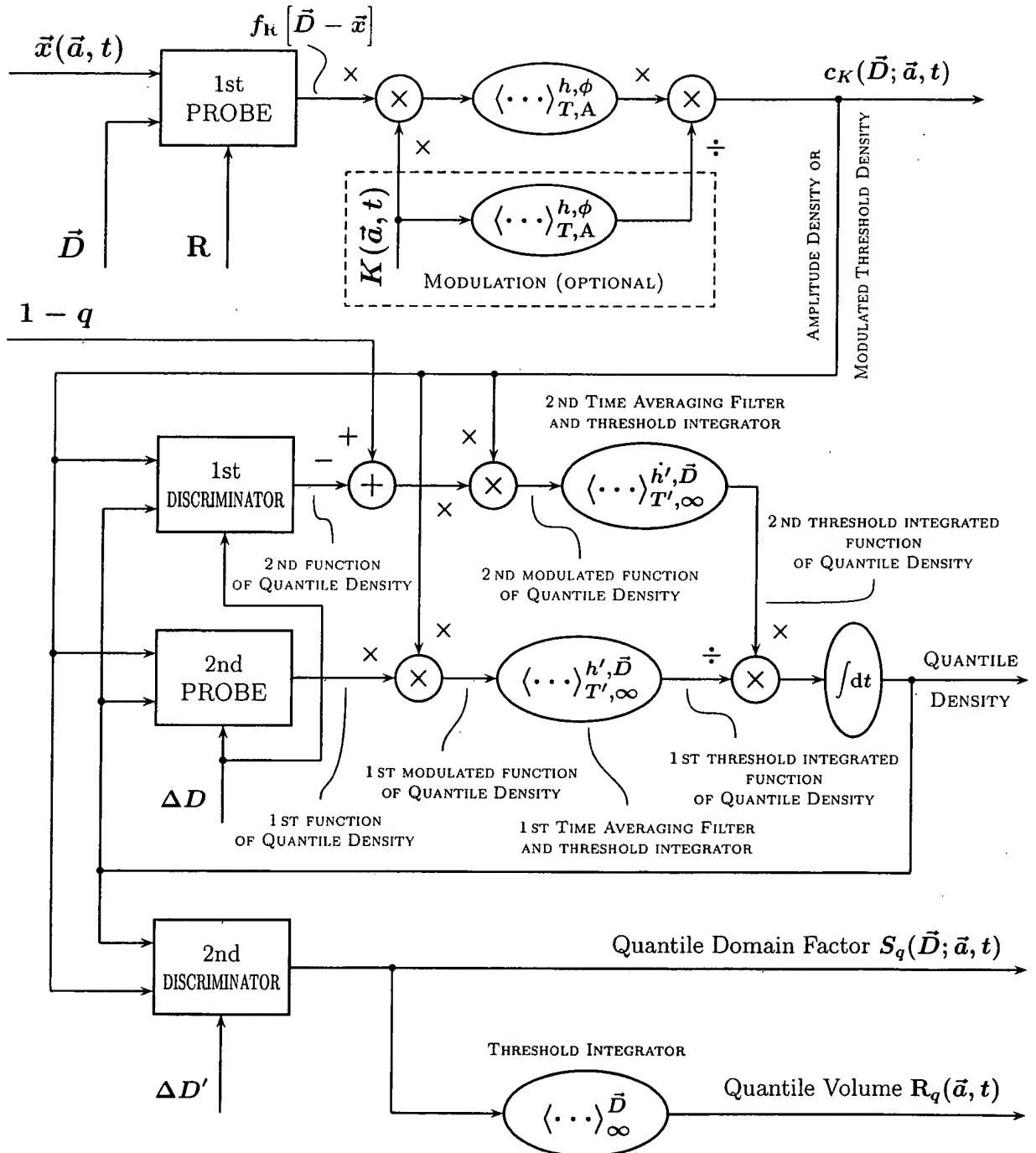


Fig. 62

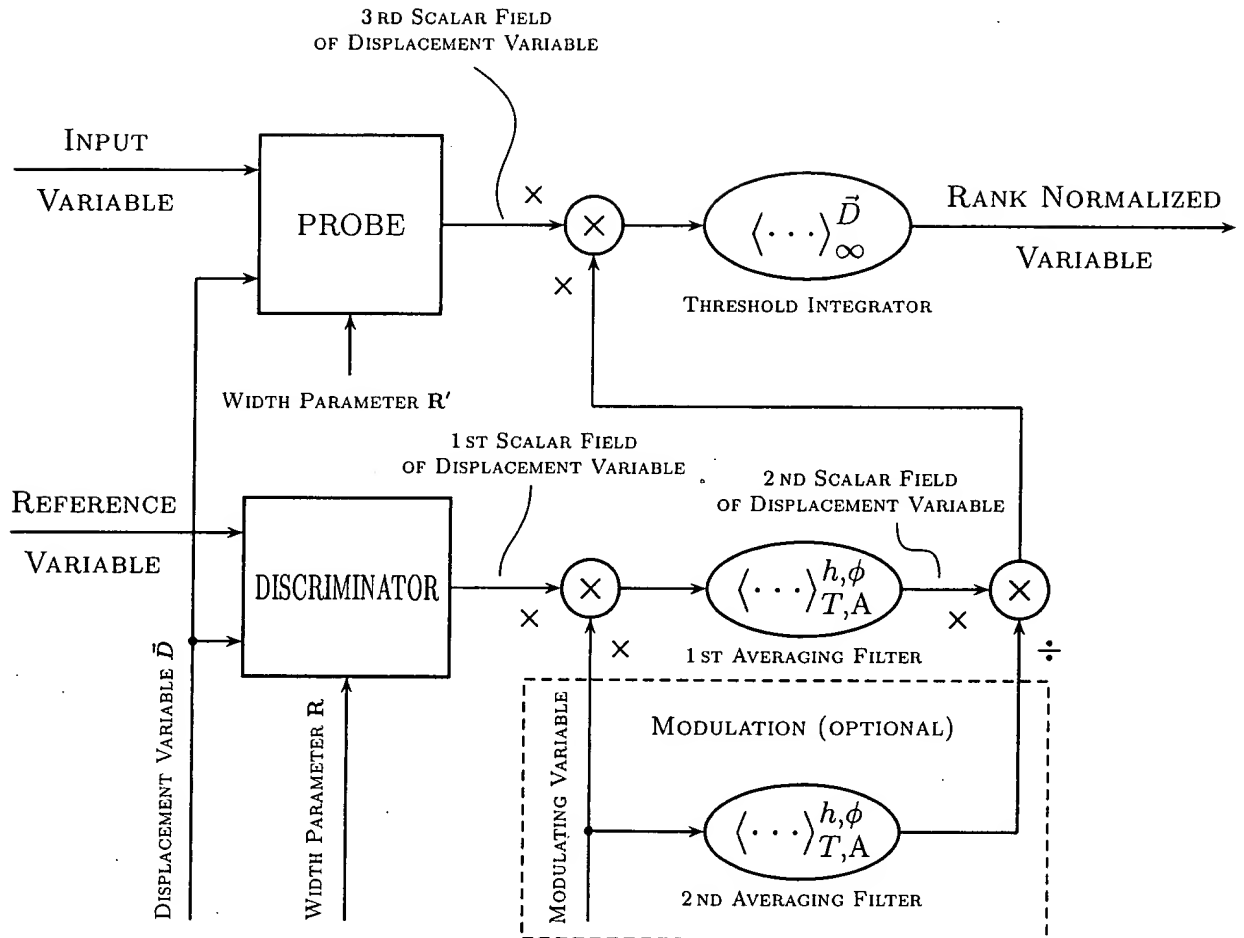


Fig. 63

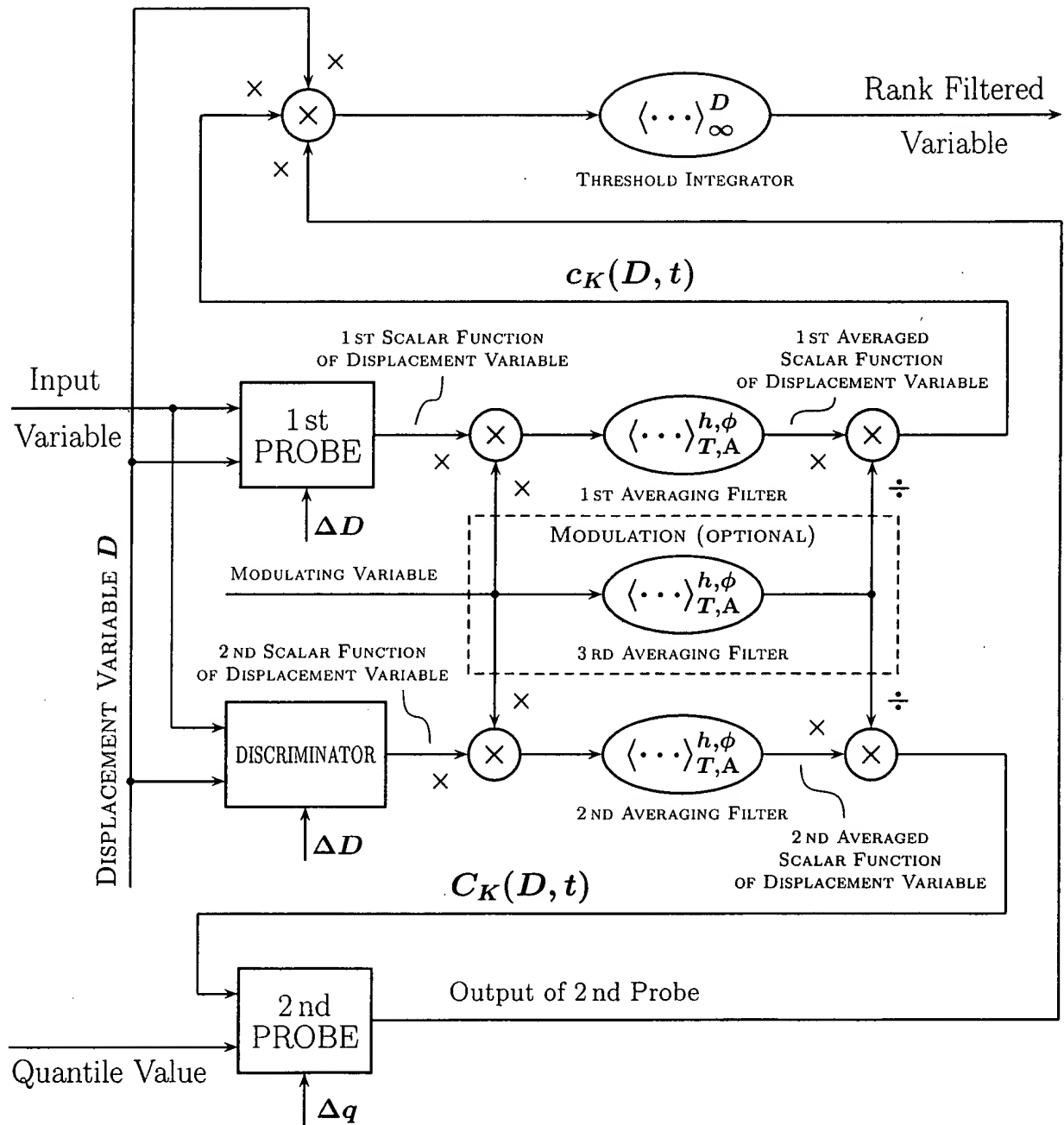


Fig. 64

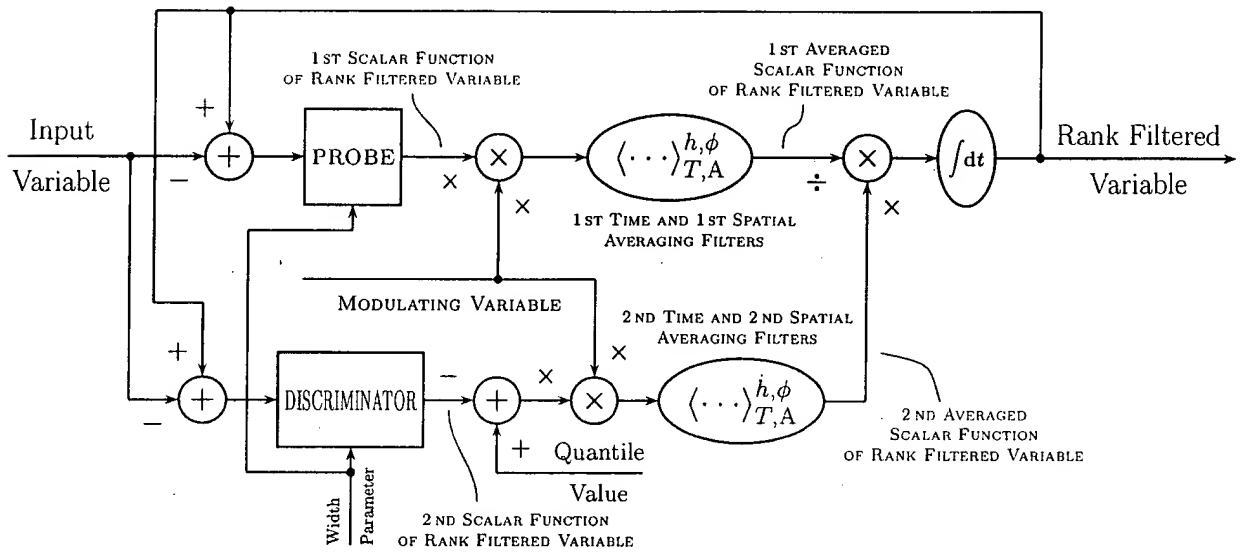


Fig. 65

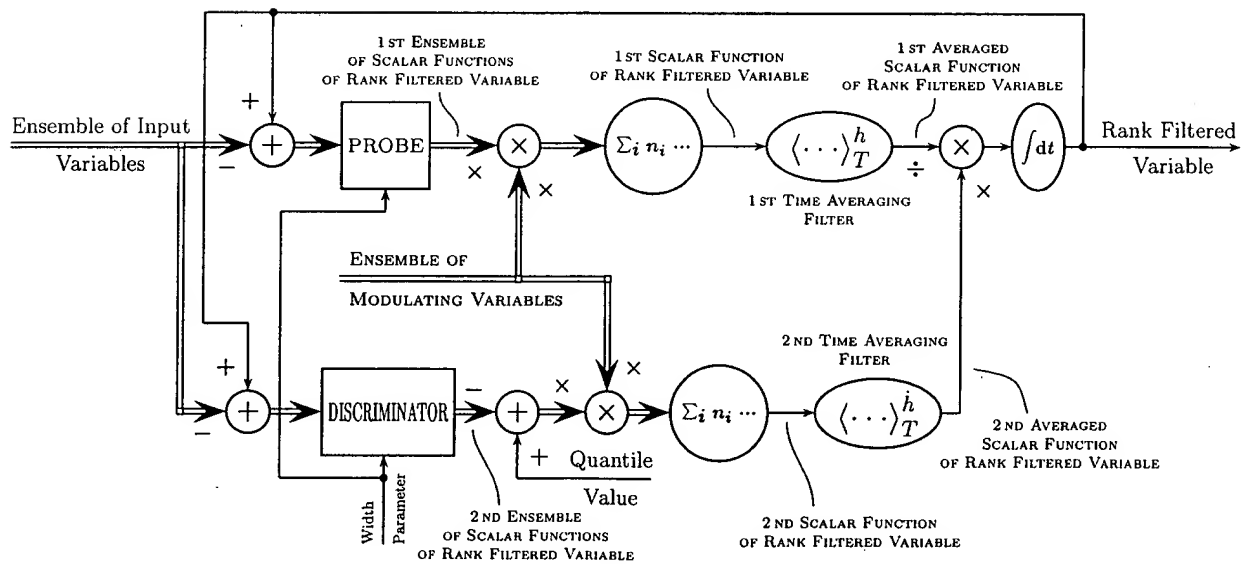


Fig. 66